



**FINAL  
ENVIRONMENTAL ASSESSMENT  
FOR  
A-29 LIGHT AIR SUPPORT (LAS)  
TRAINING BEDDOWN**

**Department of the Air Force**



**August 2014**

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**ERRATA SHEET**  
**ENVIRONMENTAL ASSESSMENT FOR**  
**A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN**

<b>PAGE</b>	<b>SECTION</b>	<b>REVISION</b>
Global		Changed document from Draft to Final.
Global		Changed date from July 2014 to August 2014.
2 of 2	FONSI	Changed signatory block.
1-2	1.5	Added new section (1.5) on Public and Agency Review of Draft EA.
4-25	4.3.3	Added information to reflect that the South Carolina Department of Health and Environmental Control provided general comments on the Proposed Action in a letter dated 30 July 2014.
4-32	4.5.3.1	Added information in response to the South Carolina Department of Health and Environmental Control letter date 30 July 2014 that Shaw AFB will continue to meet the 90-day disposal deadline for hazardous wastes under the Proposed Action.
4-32	4.5.3.3	Added information in response to the South Carolina Department of Health and Environmental Control letter date 30 July 2014 that Shaw AFB will ensure access to ERP site SWMU 98 upon request.
4-39	4.7	Revised text throughout section stating “To date, no comments have been received from other tribes contacted” to read “No comments were received from other tribes contacted.”
4-39	4.7.1	Added information reflecting that the Historic Preservation Division of the Georgia Department of Natural Resources concurred that the Proposed Action would have no effect on properties listed or eligible for listing on the NRHP.
4-39	4.7.2	Added information reflecting that the Idaho State Historical Society had no concerns with the Proposed Action and issued a determination of No Adverse Effect to Historic Properties.
4-40	4.7.3	Added information reflecting that the South Carolina Archives and History Center issued a concurrence letter on 31 July 2014 with a determination of No Adverse Effect.
4-40	4.7.3	Added information reflecting receipt of letter from the Catawba Indian Nation.
	Appendix A	Updated to include responses/letters from federal and local agencies.

## **FINDING OF NO SIGNIFICANT IMPACT**

### **A-29 Light Air Support (LAS) Training Beddown**

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) §1500-1508, and 32 CFR §989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with temporarily basing the A-29 Super Tucano Light Air Support (LAS) aircraft and associated Afghan training program at a United States Air Force (USAF) installation in the continental United States (CONUS).

In support of International Security Assistance Force (ISAF) requirements, the US is procuring the A-29 aircraft for the development of the Afghan Air Force (AAF) and training AAF pilots and maintenance personnel in its operation. The AAF needs the A-29 aircraft and trained pilots because the current fleet of AAF air-to-ground aircraft reaches the end of its service life in January 2016. This initiative would provide training for up to 30 AAF pilots and up to 90 AAF maintainers through 2018, at which time the training unit would be inactivated.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with temporarily basing the Afghan A-29 LAS training program aircraft at a USAF installation and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of basing this training unit at three alternative locations: Moody AFB, Georgia; Mountain Home AFB, Idaho; and Shaw AFB, South Carolina. It also considers the No-Action Alternative. The EA considers cumulative environmental impacts with other projects at the candidate basing locations.

#### **ALTERNATIVE A (Preferred Alternative)**

The Afghan A-29 LAS training program would be based at Moody AFB, Georgia.

#### **ALTERNATIVE B**

The Afghan A-29 LAS training program would be based at Mountain Home AFB, Idaho.

#### **ALTERNATIVE C**

The Afghan A-29 LAS training program would be based at Shaw AFB, South Carolina.

#### **NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, the Afghan A-29 LAS training program would not be bedded down at any USAF base or Air National Guard (ANG) installation. Under the No-Action Alternative, the Afghan A-29 LAS program would be unable to train sufficient AAF pilots and maintenance personnel to sustain the capacity for effective indigenous, air-to-ground counterinsurgency (COIN) operations in Afghanistan.

#### **SUMMARY OF FINDINGS**

The analyses of the affected environment and environmental consequences of implementing the alternative basing options presented in the EA concluded that by implementing standing environmental

protection measures and operational planning the USAF would be in compliance with all terms and conditions and reporting requirements for implementation of the reasonable and prudent measures stipulated by the United States Fish and Wildlife Service (USFWS). The USAF would adhere to all established environmental protection measures, regulations, plans and programs in the course of executing this action.

The Air Force has concluded that, under any alternative selected for implementation of the Proposed Action, there would be no significant adverse impacts to the following resources: biological resources, cultural resources, occupational health and safety, airspace management, noise, air quality, environmental justice, infrastructure and utilities, and hazardous materials management. In addition, the EA concluded that the action alternatives would not affect water resources, earth resources, land use, socioeconomics, or transportation. No significant adverse cumulative impacts would result from activities associated with the adoption of any alternative when considered with past, present, or reasonably foreseeable future projects at Moody AFB, Mountain Home AFB, or Shaw AFB.

### **PREFERRED ALTERNATIVE**

Moody AFB has been selected as the preferred alternative basing location for the Afghan A-29 LAS training program.

### **FINDING OF NO SIGNIFICANT IMPACT**

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Afghan A-29 LAS Training Beddown would not have a significant environmental impact, either by itself or cumulatively with other projects at Moody AFB. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

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21 August 2014

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Deputy Director of Logistics, Installations  
& Mission Support (A4/7)  
HQ Air Education and Training Command (AETC)  
JBSA Randolph TX

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Date

## **Cover Sheet**

**Responsible Agency:** Air Education and Training Command (AETC), Joint Base San Antonio, Randolph Air Force Base (AFB), Texas

**Proposed Action:** The Department of Defense (DoD) is considering temporarily basing an Afghan Air Force (AAF) A-29 Light Air Support (LAS) training unit at a United States Air Force (USAF) installation in the continental United States (CONUS). This is to ensure the AAF receives the support and training it needs to safely and effectively employ this platform for conducting operations within their home country. The Proposed Action is to beddown 20 A-29 Super Tucano aircraft at a suitable USAF CONUS base for the duration of the AAF LAS training program. Installations under consideration for the Proposed Action include: Moody AFB, Georgia; Mountain Home AFB, Idaho; and Shaw AFB, South Carolina.

**Points of Contact:** Air Force Civil Engineer Center: Ms. Raquel Fischer, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853, 210-925-3777;

**Report Designation:** Draft Environmental Assessment

**Abstract:** The Proposed Action is to beddown 20 A-29 Super Tucano aircraft at a suitable USAF CONUS base for the duration of the AAF LAS training program. The total training program is anticipated to begin in February 2015 and conclude in 2018. Preparation for the training program at the selected location could begin as early as September 2014. As part of the Proposed Action, the LAS program would provide baseline mission qualification training for up to 30 AAF pilots and up to 90 AAF maintainers. A maximum of 45 AAF trainees (pilots and maintainers) could be in training at any time.

The Proposed Action would include the utilization of existing facilities, with only minor building modifications to the interior as necessary, such as the addition and/or modification of communication lines, to support training activities on the A-29.

The Proposed Action would include employing practice ordnance, rockets, and .50-caliber practice rounds. In addition to classroom and simulator training, AAF pilots will participate in training flights over a currently available and functional USAF bombing and training range, and would include the use of airspace and Military Training Routes (MTRs) in the vicinity of the selected installation.

Under the No Action Alternative, the LAS training program and A-29 aircraft would not be bedded down at any USAF installation. The AAF LAS program would be unable to train sufficient AAF pilots to sustain effective indigenous, air-to-ground counterinsurgency support capability. Providing a training location in the CONUS is essential to delivering A-29 LAS capability before the AAF's current fleet of air-to-ground aircraft, the Mi-35, reaches the end of its service life.

The following resources were addressed in this Environmental Assessment (EA): Airspace Management; Noise; Air Quality; Safety and Occupational Health; Hazardous Materials and Waste; biological/Natural Resources; Cultural Resources; Socioeconomic Resources (Housing and Schools); Infrastructure/Utilities; and Climate Change.

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**August 2014**

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## LIST OF ABBREVIATIONS / ACRONYMS

AAF	Afghan Air Force
ACC	Air Combat Command
ACM	Asbestos-containing Materials
ACMI	Air Combat Maneuvering Instrumentation
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFCENT	US Air Forces Central Command
AFI	Air Force Instruction
AFR	Air Force Regulation
AGL	Above Ground Level
AGOW	Air Ground Operations Wing
AICUZ	Air Installation Compatible Use Zone
AME	Alternate Mission Equipment
AMU	Aircraft Maintenance Unit
ANG	Air National Guard
AQCR	Air Quality Control Region
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
BASH	Bird/Wildlife Aircraft Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CAA	Clean Air Act
CAS	Close Air Support
CEC	Commission for Environmental Cooperation
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Controlled Firing Area
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
COA	Course of Action
COIN	Counterinsurgency
CONUS	Continental United States
CZM	Coastal Zone Management
dB	Decibels
dBA	A-weighted Decibels
dBc	C-weighted Decibels
DERP	Defense Environmental Restoration Program
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
EIAP	Environmental Impact Assessment Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESOH	Environmental, Safety, and Occupational Health
EWL	Enterprise Wide Look

FAA	Federal Aviation Administration
FG	Fighter Group
FOC	Full Operational Capability
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
ft	Feet
FTD	Flight Training Device
FW	Fighter Wing
FY	Fiscal Year
GA	Georgia
GADNR	Georgia Department of Natural Resources
GHG	Greenhouse Gas
GIRoA	Government of the Islamic Republic of Afghanistan
GWP	Global Warming Potential
HAZMART	Hazardous Materials Pharmacy
Hz	Hertz
ID	Idaho
IDFG	Idaho Department of Fish and Game
IFR	Instrument Flight Rules
IICEP	Interagency/Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IOC	Initial Operating Capability
IPCC	Intergovernmental Panel on Climate Change
IQT	Initial Qualification Training
IR	Infrared
ISAF	International Security Assistance Force
JLUS	Joint Land Use Study
LAS	Light Air Support
LATN	Low-altitude Tactical Navigation
LBP	Lead-based Paint
L <sub>dmmr</sub>	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
L <sub>max</sub>	Maximum Sound Level
LOA	Letter of Agreement
LTM	Long Term Monitoring
LTO	Landing and Take-off
MAZ	Moody Activity Zone
MBTA	Migratory Bird Treaty Act
mg/m <sup>3</sup>	Milligrams per Cubic Meter
MHRC	Mountain Home Range Complex
MMRP	Military Munitions Response Program
MOA	Military Operations Area
MQT	Mission Qualification Training
MR_NMAP	MOA and Range NOISEMAP
MSDS	Material Safety Data Sheets
MSG	Mission Support Group
MSL	Mean Sea Level
MTF	Maintenance Training Flight
MTR	Military Training Route
N <sub>2</sub> O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NCA	National Conservation Area
NCSU	North Carolina State University
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NM	Nautical Mile
NNHP	Nevada Natural Heritage Program
NO <sub>2</sub>	Nitrogen Dioxide
NOA	Notice of Availability
NO <sub>x</sub>	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
O <sub>3</sub>	Ozone
OCONUS	Outside the Continental US
ODFW	Oregon Department of Fish and Wildlife
OSS	Operations Support Squadron
Pb	Lead
PCB	Poly-chlorinated Biphenyls
PL	Public Law
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter with an Aerodynamic Diameter less than or equal to 10 Micrometers
PM <sub>2.5</sub>	Particulate Matter with an Aerodynamic Diameter less than or equal to 2.5 Micrometers
POL	Petroleum, Oil, and Lubricants
ppb	Parts per Billion
ppm	Parts per Million
PR	Personnel Recovery
QD	Quantity-Distance
RCRA	Resource Conservation and Recovery Act
RNM	Rotorcraft Noise Model
ROI	Region of Influence
RQG	Rescue Group
SAC	Strategic Air Command
SC	South Carolina
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SECAF	Secretary of the Air Force
SEL	Sound Exposure Level
SO <sub>2</sub>	Sulfur Dioxide
sq ft	Square Feet
SREL	Savannah River Ecology Laboratory
SUA	Special Use Airspace
SWMU	Solid Waste Management Unit
TGO	Touch-and-Go
TRW	Tactical Reconnaissance Wing
TSCA	Toxic Substances Control Act
US	United States
USAF	United States Air Force
USC	United States Code
USEPA	US Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UTD	Unit Training Device
VFR	Visual Flight Rules
VOC	Volatile Organic Compound
WG	Wing
WLT	Weapons Load Training
µg/m <sup>3</sup>	Micrograms per Cubic Meter

## **1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION**

### **1.1 INTRODUCTION**

The Department of Defense (DoD) is considering temporarily basing an Afghan Air Force (AAF) A-29 Light Air Support (LAS) training unit at a United States Air Force (USAF) installation in the continental United States (CONUS). This is to ensure the AAF receives the support and training it needs to safely and effectively employ this platform for conducting operations within their home country. Implementation of the A-29 LAS program would increase the AAF's capacity in airborne self-defense for their government and citizens.

LAS is defined by the deployment of air action, by either fixed-or rotary-wing aircraft, against hostile targets that are close to friendly forces. LAS includes mission types such as aerial escort, air interdiction, close air attack, and armed reconnaissance. LAS provides critical fire support and superiority of force to ground troops, especially when engaged in the asymmetrical warfare in mountainous terrain that characterizes ongoing Counterinsurgency (COIN) operations in the Afghanistan Theater of Operations.

In accordance with the National Environmental Policy Act of 1969 (NEPA), the USAF is preparing this environmental assessment (EA) to evaluate potential environmental impacts associated with basing the LAS training program for AAF pilots and support personnel at an installation in the United States (US).

NEPA requires consideration of environmental issues in federal agency planning and decision making. Under NEPA, federal agencies must prepare an EA or environmental impact statement (EIS) for any major federal action, except those actions that are determined to be "categorically excluded" from further analysis. An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a Proposed Action are significant, resulting in the preparation of an EIS; or if not significant, resulting in the preparation of a Finding of No Significant Impact (FONSI), and where applicable, a Finding of No Practicable Alternative (FONPA). This EA was prepared in accordance with NEPA (42 United States Code [USC] 4321-4317), implemented through the Council on Environmental Quality (CEQ) regulation of 1978 (40 *Code of Federal Regulations* [CFR] § 1500-1508), and 32 CFR §989 *Environmental Impact Analysis Process* (EIAP).

### **1.2 PURPOSE OF THE ACTION**

The purpose of the Proposed Action is to provide training to AAF pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft at a suitable CONUS location.

### **1.3 NEED FOR THE ACTION**

In support of International Security Assistance Force (ISAF) requirements, the US is procuring 20 A-29 LAS aircraft for the development of the AAF. The AAF needs the A-29 aircraft because the current fleet of AAF air-to-ground aircraft, the Mi-35, reaches the end of its service life in January 2016.

The A-29 LAS training program would deliver desired sustainable capability for the AAF; specifically, so that the AAF may safely and effectively employ the platform on their own starting in 2016.

By receiving training in the US, American trainers and AAF trainees can focus on a qualification mission without being impacted by ongoing hostilities in the Afghanistan Theater of Operations.

This training must be conducted in the US because training outside of the US cannot be accomplished by January 2016.

#### **1.4 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS**

Federal, state, and local agencies with jurisdiction that could be affected by the alternative actions were notified and consulted during the development of this EA.

**Appendix A** contains the list of agencies consulted during this analysis and copies of correspondence, responses, and concurrences (as applicable).

#### **1.5 PUBLIC AND AGENCY REVIEW OF EA**

A Notice of Availability (NOA) of the Draft EA and FONSI was published in the newspapers of record (listed below), announcing the availability of the EA for review on 20 July 2014. The NOA invited the public to review and comment on the Draft EA. The public and agency review period ended on 20 August 2014. Public and agency comments are provided in **Appendix A**; however no public comments were received.

The NOA was published in the following newspapers: Valdosta Daily Times, Valdosta, Georgia (GA); The Darien News, Darien, GA; The Lanier County News, Lakeland, GA; The Idaho Statesman, Boise, Idaho (ID); The Mountain Home News, Mountain Home, ID; The Twin Falls Times-News, Twin Falls/Magic Valley, ID; The Columbia State, Columbia, South Carolina (SC); and The Sumter Item, Sumter, SC.

Copies of the Draft EA and FONSI were also made available for review at the following locations:

South Georgia Regional Library 300 Woodrow Wilson Dr. Valdosta, GA 31602	Lanier County Library 124 South Valdosta Road Lakeland, GA 31635	Ida Hilton Public Library 1105 North Way Darien, GA 31305
Mountain Home Public Library 790 N 10th E Street Mountain Home, ID 83647	Mountain Home AFB Library 480 5th Avenue, Building 100 Mountain Home AFB, ID 83648	Sumter County Library 111 North Harvin Street Sumter, SC 29150



## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

### **2.1 PROPOSED ACTION**

The Proposed Action is to beddown 20 A-29 Super Tucano aircraft at a suitable USAF CONUS base for the duration of the AAF LAS training program. The total training program is anticipated to begin in February 2015 and conclude in 2018. Preparation for the training program at the selected location could begin as early as September 2014.

As part of the Proposed Action, the LAS program would provide baseline mission qualification training (MQT) for up to 30 AAF pilots and up to 90 AAF maintainers. A maximum of 45 AAF trainees (pilots and maintainers) could be in training at any time.

USAF permanent supporting personnel would include 41 Air Advisors, comprised of 17 pilots and 24 maintainers. In addition, there would be 24 other USAF operations and maintenance support personnel, 10 personnel for munitions support, and 6 for base operating support for a total of 81 USAF permanent supporting personnel. The total number of USAF projected dependents is estimated at 180; AAF trainees will not be accompanied by dependents.

Additionally, approximately 45 contractor personnel would provide maintenance training support to the AAF maintainers on the A-29 Super Tucano aircraft.

The Proposed Action would include the utilization of existing facilities, with only minor building modifications to the interior as necessary, such as the addition and/or modification of communication lines, to support training activities on the A-29. Course of Action (COA) is a military term used to describe the different facility options at each alternative basing location. COAs developed in relation to this Proposed Action are not being analyzed as alternatives in this EA, as changes in necessary modifications and impacts between the COAs proposed would be insignificant.

#### **2.1.1 Aircraft Characteristics**

The AAF LAS program would train AAF pilots and maintainers to operate the A-29 Super Tucano aircraft. These aircraft are already in service in the Close Air Support (CAS) role in the air forces of several nations.



The A-29 Super Tucano is a tandem seat aircraft driven by a single turboprop, based on the Embraer EMB-312 Tucano trainer aircraft. The aircraft is designed to operate in extreme climates and out of minimally prepared airfields. Exceptional maneuverability, minimal infrared (IR) and sound signatures, and Kevlar armoring enhance its survivability in combat against hostile forces at low altitudes. The A-29 incorporates fourth-generation avionics and weapons systems, and is capable of delivering precision guided munitions including air-to-air and air-to-ground missiles and laser-guided bombs in addition to unguided munitions, and is also armed with two .50-caliber machine guns.

### **2.1.2 Mission Characteristics**

The objective of the LAS program is to establish Initial Operating Capability (IOC) in January 2016 by providing four aircraft, up to eight trained AAF pilots and up to 26 maintainers to the Government of the Islamic Republic of Afghanistan (GIROA) with the capability to conduct combat or combat support missions in Afghanistan. As training completes, aircraft ownership, operational command, and support will transfer in stages to the AAF. At Full Operational Capability (FOC), the AAF will possess 20 A-29 Super Tucano aircraft capable of sustained operation, a ratio of fully trained pilots to aircraft of at least 1:1, and sufficient maintainers and capacity to perform or acquire maintenance for the entire fleet. AAF ground support crews will be trained in ordnance loading and maintenance, but will only assume those duties upon transfer to Afghanistan. USAF personnel and contractors will assume responsibility for all ordnance loading for LAS training missions in the US.

All AAF trainee pilots and maintenance personnel would be housed in dormitories at the installation.

AAF trainee pilots will participate in an initial qualification training (IQT) program to establish basic competency in basic aircraft operation and mission. The AAF pilots will then progress to MQT of increasing complexity and advancement to include employing practice ordnance, rockets, and .50-caliber practice rounds. In addition to classroom and simulator training, AAF pilots will participate in training flights over a currently available and functional USAF bombing and training range. Training is planned to be completed in 2018 when all aircraft are anticipated to be transferred to GIROA. In 2018, the A-29 Flying Training Unit would be inactivated.

Throughout this document, two terms are used to describe different components of aircraft flying activities; sortie and operation. Each has a distinct meaning commonly applied to a specific set of activities in a particular airspace environment or unit. These terms also provide a means to quantify activities for the purposes of analysis.

- ◆ **Sortie:** a single military aircraft flight from initial takeoff through final landing, and includes everything that might be conducted during that flying mission. A sortie can include more than one operation.
- ◆ **Operation:** The term “operation” can apply to both airfield and airspace activities. For airfield activities, an operation comprises one action such as a arriving or departing. One closed pattern would result in two operations, an arrival to the airfield and departure from it. For airspace activities, an operation consists of the use of one airspace unit (e.g., Slow Route) by one aircraft. Each time a single aircraft flies in a different airspace unit, one operation is counted for the unit.

Training will be conducted up to 12 hours per day and as many as six days per week, for the duration of the program. Each AAF trainee pilot is expected to complete 140-150 training sorties to achieve 175 flight hours, with no more than five of these sorties occurring after sunset. The LAS program will

complete approximately 12 sorties per day at the location selected; assuming 261 training days per year, the program will complete an estimated total of 3,132 sorties per year. Training will begin in February 2015 and conclude in 2018. No new military training routes (MTRs), restricted airspace created to perform low altitude training, would be required at any installation, and sortie numbers will be the same for all alternative basing locations. Of the training sorties, approximately 50 sorties per year would utilize MTRs with approximately 24 sorties during the busiest month. Existing MTRs, airspace, and ranges will be used, all of which have the capacity to support the A-29 LAS training mission.

During training missions conducted in CONUS, the A-29s will be equipped only with practice ordnance, rockets and .50-caliber practice rounds. Planned training munitions types include BDU-33 unguided bombs and BDU-50/GBU-12 guided munitions, as well as 2.75" rockets with practice warheads. The internal .50-caliber guns will fire ball ammunition typically used for training. AAF trainee pilots will be accompanied by a USAF instructor pilot during all training missions. Projected annual training munitions that would be expended by the Proposed Action are shown in **Table 2.1-1**.

Training on and use of chaff and flares will not be included in this program.

**Table 2.1-1. Projected A-29 Annual Training Munitions Expenditure**

Munitions	A-29 Annual Use
BDU-33	1,008
2.75" Rockets	672
BDU-50/GBU-12	48
.50 Caliber Ammunition	16,800

Source: Ferrier 2014

## 2.2 SELECTION STANDARDS FOR THE ALTERNATIVES

NEPA and CEQ regulations mandate the consideration of reasonable alternatives to the proposed action. "Reasonable alternatives" are those that also could be utilized to meet the purpose of and need for the proposed action. In addition, selection standards may be used to narrow the range of viable alternatives. Per 32 CFR §989, the USAF EIAP regulations, selection standards are used to identify alternatives for meeting the purpose and need for the USAF action.

A total of 46 Air National Guard (ANG) and USAF installations were evaluated through an expedited, desktop Enterprise Wide Look (EWL). These 46 bases were evaluated by a group of experts in the fields of basing methodology, training range issues, airspace requirements, and flying training whose opinions were solicited in a three-week period of consultation.

The following selection standards were used to narrow the list of installations that could potentially support the Proposed Action:

- ◆ The installation currently houses a wing or group that performs an air-to-ground fighter mission.
- ◆ The installation is within 120 nautical miles (NM) of a USAF-administered bombing or training range capable of supporting training with .50-caliber machine guns and training munitions such as bombs, rockets, and precision guided training munitions.

- ◆ The installation has sufficient space to house the training activities and associated support personnel. The LAS program will require a minimum 5,000 ft runway and approximately 39,000 total square feet (sq ft) of available facility space. For training and squadron operations, it will require 12,000 sq ft of office space, and 1,000 sq ft of space to accommodate simulators for ground-based training. To support 20 LAS A-29 aircraft, an 8,000 sq ft Aircraft Maintenance Unit (AMU) facility is required, along with 10,000 sq ft of hangar space (with fuel cell), 8,000 sq ft general purpose warehouse, and sufficient airfield ramp space (approximately 18,000 sq ft) to park the 20 aircraft. Other required facilities include munitions storage and build up area, fulltime weapons and munitions maintenance support, housing for up to 81 USAF personnel and their dependents, and dormitories for up to an average of 45 AAF personnel.
- ◆ Any installation requiring further construction, significant renovation, or expansion of existing facilities to accommodate any mission area was eliminated from consideration due to the mission-driven compressed timeline.
- ◆ The LAS program will require typical full-service, 24-hour, 7-days per week, installation support such as security, medical services, child development centers, dining facilities, housing, and other such services typically provided by USAF bases.

The advice of those experts and the selection standards eliminated all but three candidate locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; and Shaw AFB, South Carolina. These three locations were selected for candidacy and further review by the Secretary of the Air Force (SECAF).

### **2.3 ALTERNATIVE A (PREFERRED ALTERNATIVE): MOODY AFB, GA**

Moody AFB is an Air Combat Command (ACC) installation in southern Georgia, consisting of 10,843 acres in Lowndes and Lanier counties. The installation is approximately 10 miles northeast of the City of Valdosta, Georgia (**Figure 2.3-1**). The installation includes the main base (5,039 acres), adjacent Grand Bay Range (5,874 acres), and Grassy Pond Recreational Annex (489 acres) located 25 miles (22 NM) southwest of the main base. More than 5,900 military and civilian personnel are currently stationed at Moody AFB.

Military use of the area began in early 1942 with the establishment of the Moody Field Advanced Pilot Training School. The installation was closed in 1946, but was reopened permanently in 1951 to train pilots during the Korean conflict. Moody Field gained official, permanent status as an AFB in 1954. Numerous force structure changes have occurred over the years resulting in the establishment of different missions (Moody AFB 2008).

The 23d Wing (23 WG) is headquartered at Moody AFB. As an ACC installation, Moody AFB fulfills ACC's mission as the primary provider of combat airpower to America's unified combatant commands. The 23d Fighter Group (23 FG), 347th Rescue Group (347 RQG), 23d Mission Support Group (23 MSG), 23d Medical Group, 23d Maintenance Group, and the 563d Rescue Group (563 RQG) all operate under the 23 WG. The wing executes worldwide CAS, force protection, and personnel recovery (PR) operations in support of humanitarian interests, US national security interests, and the overseas contingency operations. The wing utilizes the USAF's largest combat coded A-10 FG, HC-130 transport aircraft, and HH-60 helicopters (Moody AFB 2011a). Additionally, the 93d Air Ground Operations Wing (93 AGOW) is a tenant at Moody AFB. The 93 AGOW provides highly-trained ground combat forces capable of

integrating air and space power into the ground scheme of fire and maneuver. The wing members conduct offensive and defensive ground combat operations worldwide to protect expeditionary aerospace forces with an airborne capability.

### 2.3.1 Range Facilities

There are two ranges that could be used for A-29 LAS training purposes at Moody AFB; Grand Bay Range and Townsend Range (**Figure 2.3-1**). Grand Bay Range encompasses 5,874 acres and lies approximately 2.45 NM east of Main Base, with offices, structures, and impact areas occupying about 500 acres along the northeastern range boundary. Grand Bay Range primarily supports training by 23 WG aircrew and personnel, and secondarily supports 23 WG ground personnel and tenant units.

Townsend Range covers approximately 5,182 acres in McIntosh County, Georgia. Townsend Range is approximately 113 NM (130 miles) east-northeast of Moody AFB and is routinely used by various military services including aircrews from Moody AFB for bombing and air combat training. Townsend Range is within the Coastal 1 East Military Operations Area (MOA).

Grand Bay Range and Townsend Range are within Restricted Areas, which are established to confine or segregate activities considered hazardous to nonparticipating aircraft. There are multiple Restricted Areas above Grand Bay Range and Townsend Range. Restricted Areas for Grand Bay Range include R-3008A, R-3008B, R-3008C, and R-3008D. Restricted Areas for Townsend Range include: R-3007A, R-3007B, R-3007C, and R-3007D (**Figure 2.3-1**).

MTRs proposed for use by the A-29s at Moody AFB include VR-1001 (A through H), VR-1003 (A through F and L through R), VR-1004, and IR-016 (A through D) (**Figure 2.3-1**).

### 2.3.2 Installation Facilities

Within the Moody AFB alternative, there is one COA for buildings and support facilities that would satisfy the needs of the Proposed Action. An existing dormitory (Building 580) would be used to house the AAF personnel (**Figure 2.3-2**). On-base housing options are available for USAF military personnel assigned to the A-29 training group. **Table 2.3-1** presents the Facility COA for Moody AFB.

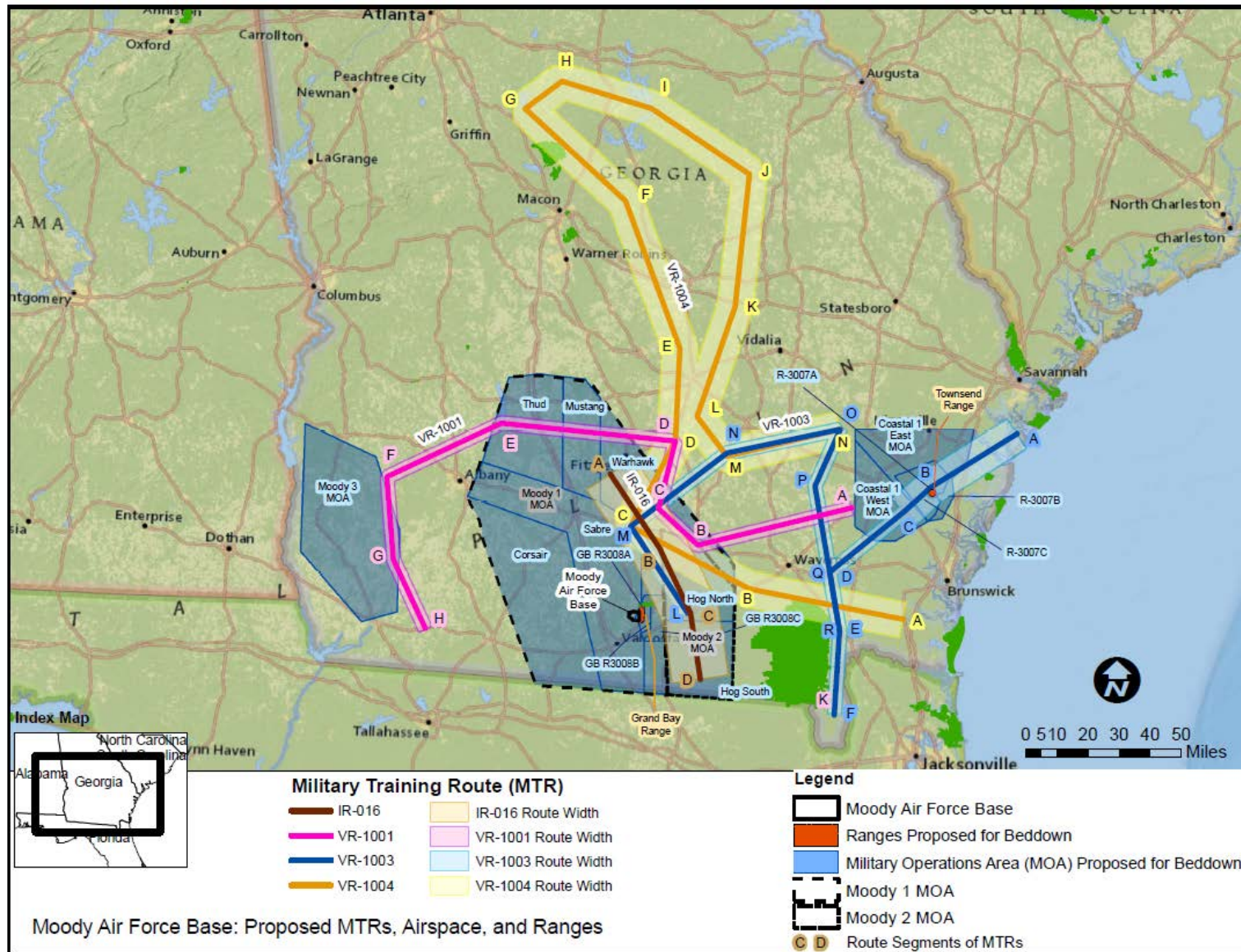
**Table 2.3-1. Moody AFB – Facility COA**

Building Function	COA
Squadron Operations	Bldg. 706
Classrooms	Bldg. 590
Hangar	Bldg. 788
Aircraft Maintenance Unit	Bldg. 701
Flight Training Device (FTD)	Bldg. 590
Warehouse	Bldg. 754
Dormitory	Bldg. 580

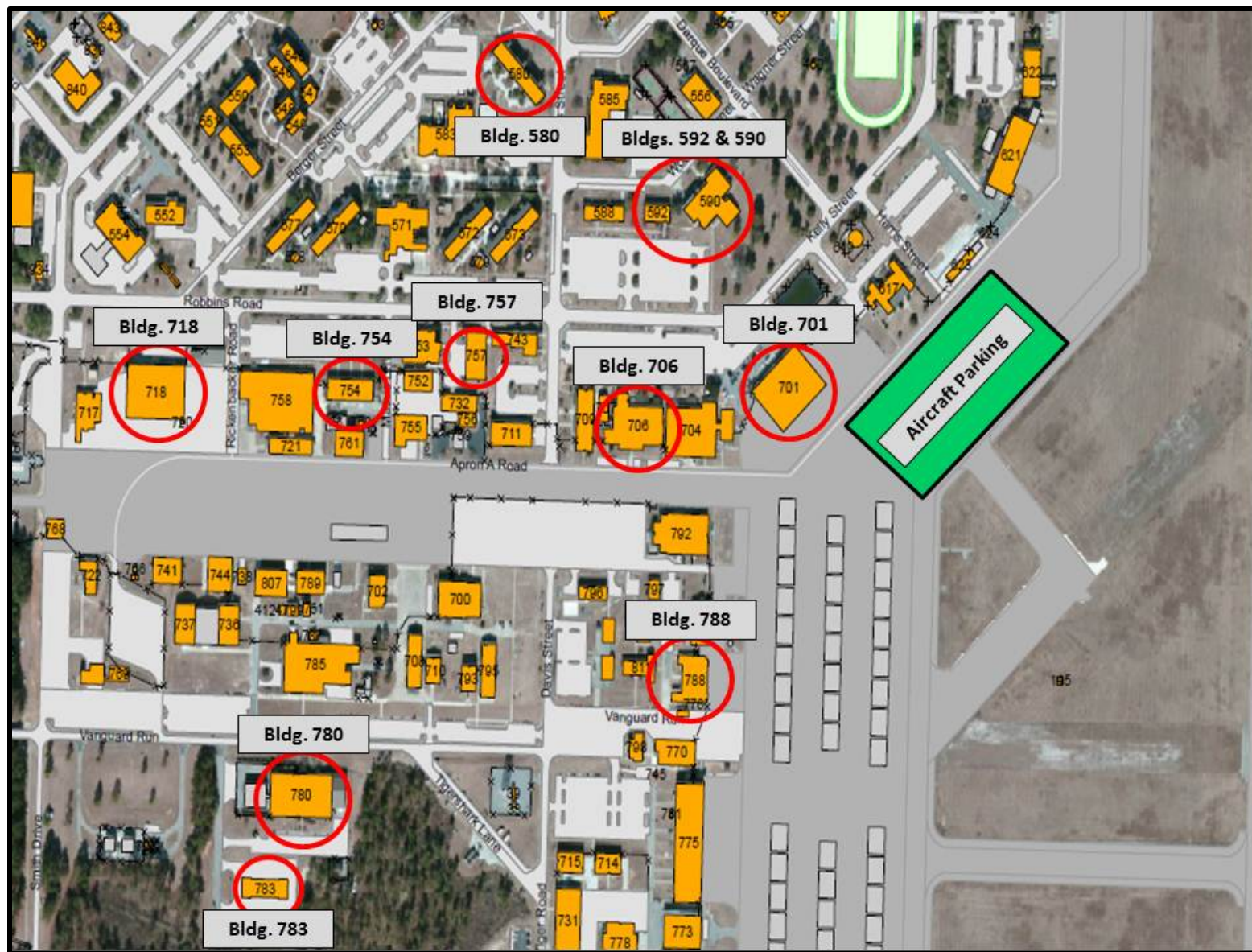
**COA:** This COA would place Squadron Operations for the A-29 training beddown in Building 706, utilize classroom space and place the FTD in Building 590, use the hangar space in Building 788, place the AMU in Building 701, and use Building 754 for warehouse storage space. Implementation of this option would displace the A-10 Phase Support Section from Building 701 and displace Egress function from Building 788 tentatively to Building 711. AAF trainees would be housed in dormitory Building 580 (**Figure 2.3-2**). Any building modifications necessary for A-29 LAS training would be to the interior of these buildings only; no exterior modifications or new construction would take place.

The Site Survey Report for Moody AFB (Moody AFB 2014) identified potential alternate facilities for some of the required functions for A-29 training beddown. Should Building 706 be unable or insufficient to house Squadron Operations for LAS training, Building 592 would be used. Hangar space at Moody AFB is also available in Building 718 if Building 788 is unavailable or insufficient. Similarly, Building 757 could be used for the FTD in place of Building 590. Either Building 780 or Building 783 could be used for warehouse storage space in place of Building 754 (**Figure 2.3-2**).

Figure 2.3-1. Moody AFB – Proposed MTRs, Airspace, and Ranges









## **2.4 ALTERNATIVE B: MOUNTAIN HOME AFB, ID**

Mountain Home AFB is an ACC installation located in southwestern Idaho, in Elmore County, approximately 50 miles southeast of Boise and 8 miles southwest of the City of Mountain Home (**Figure 2.4-1**). Mountain Home AFB covers 6,844 acres and is home to the 366th Fighter Wing (366 FW), which is composed of about 4,800 military and civilian personnel.

Mountain Home AFB was established in 1943 to provide the US Army Air Corps with a facility for bomber aircraft training during World War II. Between 1943 and 1992, Mountain Home AFB changed missions and commands several times, including two deactivations, from 1945 to 1948 and 1950 to 1951. Mountain Home AFB was reactivated as a Strategic Air Command (SAC) installation in 1949. The Tactical Air Command assumed control of the installation and Saylor Creek Range in 1966. In 1992, ACC assumed control of Mountain Home AFB.

Although the 366 FW was not activated until after World War II, it shares the World War II heritage of the 366th Operations Group, whose precursor organization, the 366th Fighter Group, stood up about the same time the installation was being built. Today the 366 FW is home to the F-15E Strike Eagle and F-15SG fighter aircraft, flown by the Singapore AF.

### **2.4.1 Range Facilities**

The Mountain Home Range Complex (MHRC) encompasses Saylor Creek Range and Juniper Butte Range within the Jarbidge North MOA, both of which are proposed ranges for A-29 training, as well as five other adjacent MOAs (**Figure 2.4-1**). Saylor Creek Range and its associated airspace (R-3202) are located about 14 NM (16 miles) southeast of Mountain Home AFB and comprise approximately 109,466 acres, including a 12,200-acre exclusive use area. Land use in this exclusive use area consists solely of target areas and training support facilities, while the remainder of acreage at Saylor Creek Range is undeveloped open space. A barbed-wire fence surrounds the exclusive use area and restricts access to all but authorized personnel. Juniper Butte Range and its associated airspace (R-3204) are approximately 39 NM (45 miles) southeast of Mountain Home AFB and comprise around 12,812 acres of land. The MHRC also includes 30 electronic emitter sites used to simulate enemy threats and five no-drop target areas for simulated ordnance delivery.

To the west of Mountain Home AFB in Oregon are Saddle A and Saddle B MOAs, which are also proposed airspace for the A-29 training. Military flight training has occurred in the airspace encompassed by these MOAs since World War II. The Saddle MOAs are comprised of approximately 2,372 square miles of airspace and are managed and scheduled by the Idaho ANG; however, Mountain Home AFB is the primary user of this airspace. These MOAs are used for a wide range of training activities, including air-to-air combat maneuvering, intercept, suppression of enemy air defenses, and navigation training.

MTRs proposed for use by the A-29s at Mountain Home AFB include VR-316, VR-319, VR-1300, VR-1301, VR-1302, and IR-303 (**Figure 2.4-1**).

## 2.4.2 Installation Facilities

Within the Mountain Home AFB alternative, there are three COAs for buildings and support facilities that would satisfy the need of the Proposed Action. An existing dormitory (Building 2425), which was previously recommended for closure in the Mountain Home AFB Fiscal Year (FY) 2012 Dormitory Master Plan (Mountain Home AFB, 2012a), would be used to house the AAF personnel (**Figure 2.4-2**). On-base privatized housing options are available for USAF military personnel assigned to the A-29 training group. **Table 2.4-1** presents the Facility COAs for Mountain Home AFB.

**Table 2.4-1. Mountain Home AFB – Facility COAs**

Building Function	COA 1	COA 2	COA 3
Squadron Operations	Bldg. 1363	Bldg. 1363	Bldg. 211 (2nd floor)
Classrooms	Bldg. 1361 and Hangar 1331 (Admin Portion)	Bldg. 211 (2nd floor; shared classrooms)	Bldg. 211 (1st and 2nd floors)
Hangar	Hangar 1331	Bldg. 211	Bldg. 211
Aircraft Maintenance Unit	Bldg. 1361	Bldg. 211 (1st floor)	Bldg. 211 (1st floor)
Flight Training Device	Hangar 1331	Bldg. 211 (hangar bay)	Bldg. 211 (hangar bay)
Warehouse	Hangar 1361	Bldg. 211 (hangar bay)	Bldg. 211 (hangar bay)
Dormitory	Bldg. 2425	Bldg. 2425	Bldg. 2425

**COA 1:** This COA would use Building 1363 for Squadron Operations, Hangar 1331 for the warehouse, high bay hangar and FTD, and Building 1361 for the AMU. No other units would be displaced if this COA were implemented. However, this COA would require the installation of a fire suppression system in order for Hangar 1331 to meet the needs of the A-29 beddown, or a waiver for fire suppression may be possible with extra portable fire extinguishers. There is ample ramp space available for parking these aircraft just outside of Hangar 1331 and Building 1363 (**Figure 2.4-3**). Any modifications necessary for the A-29 LAS training would be to the interior of these buildings only; no exterior modifications or new construction would be included.

**COA 2:** This COA would use the first floor of Building 211 to house the AMU, Warehouse, High Bay Hangar and FTD for the A-29 beddown. Squadron Operations would be housed in Building 1363, leaving the second floor of Building 211 as shared classroom space. Implementing this COA would displace only the Weapons Load Training (WLT) tentatively to Hangar 1331. Maintenance Training Flight (MTF) would continue to use the shared classroom space on the second floor of Building 211. There is ample ramp space available for parking the aircraft just outside of Building 211 (**Figure 2.4-3**). Any necessary modifications to these buildings to meet the needs of the Proposed Action would be completed on the interior of the buildings only; no exterior modifications or new construction would take place.

**COA 3:** This COA would use the entirety of Building 211 for the A-29 beddown. Squadron Operations would be housed on the second floor along with classrooms for training, while the AMU, Warehouse, High Bay Hangar, and FTD would be housed on the first floor. Implementing this COA would displace the WLT and MTF tentatively to Hangar 1331 and Building 1361, respectively. There is ample ramp space available for parking the A-29 aircraft just outside of Building 211 (**Figure 2.4-3**). While modifications may be done to the interior of Building 211 to meet the needs of this Proposed Action, no exterior changes or new construction would take place.

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2-11

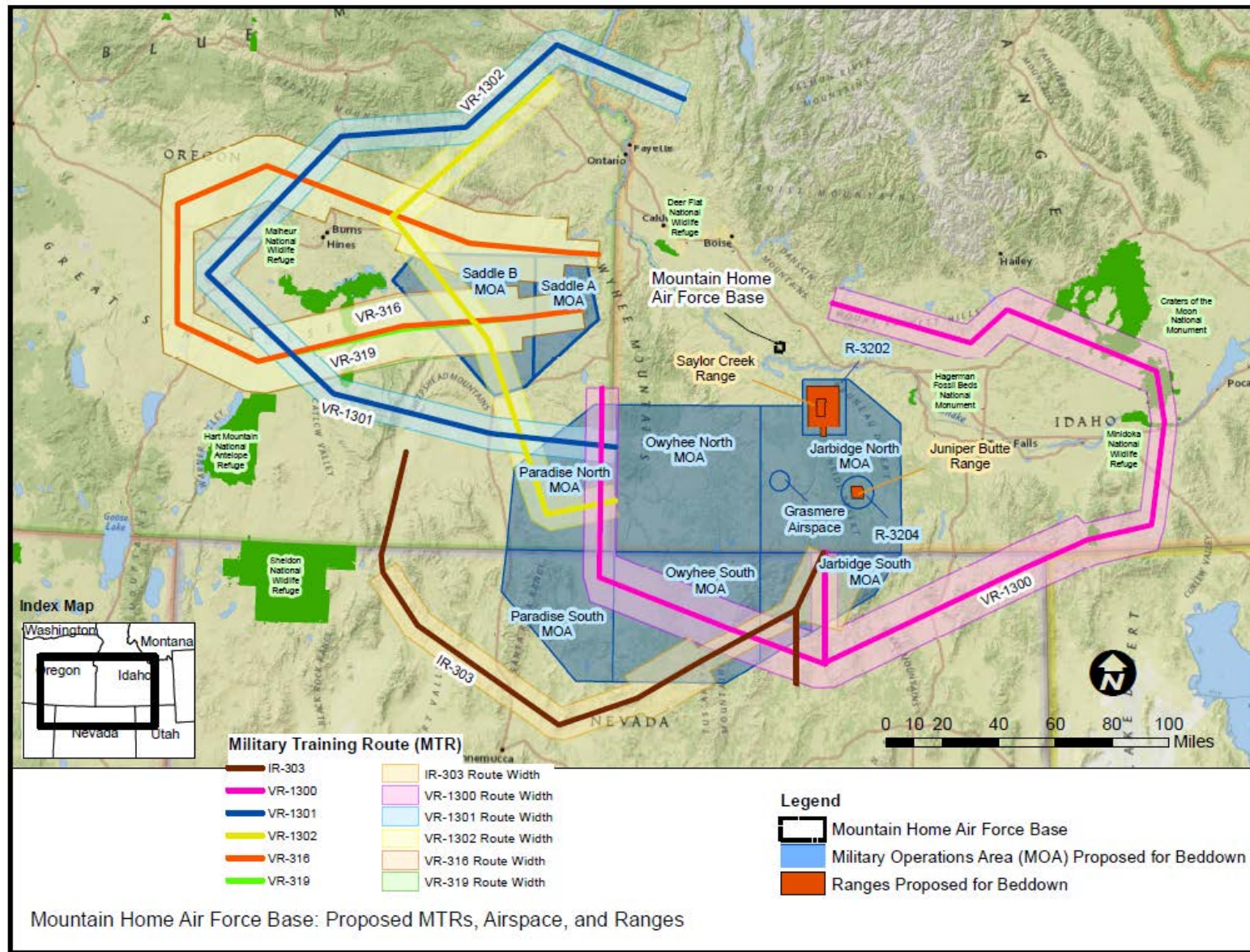




Figure 2.4-2. Mountain Home AFB – Installation Facilities (Building 2425)

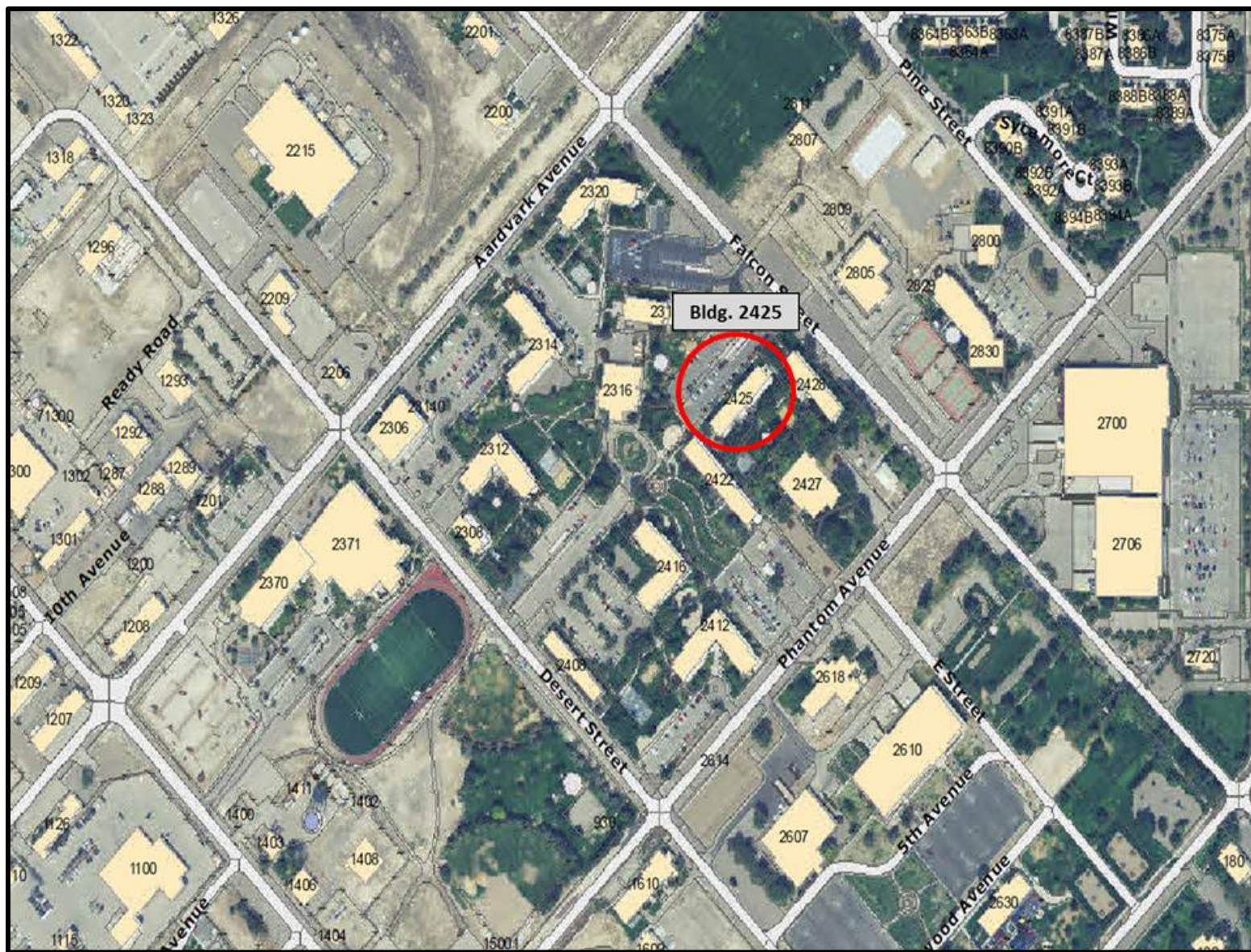
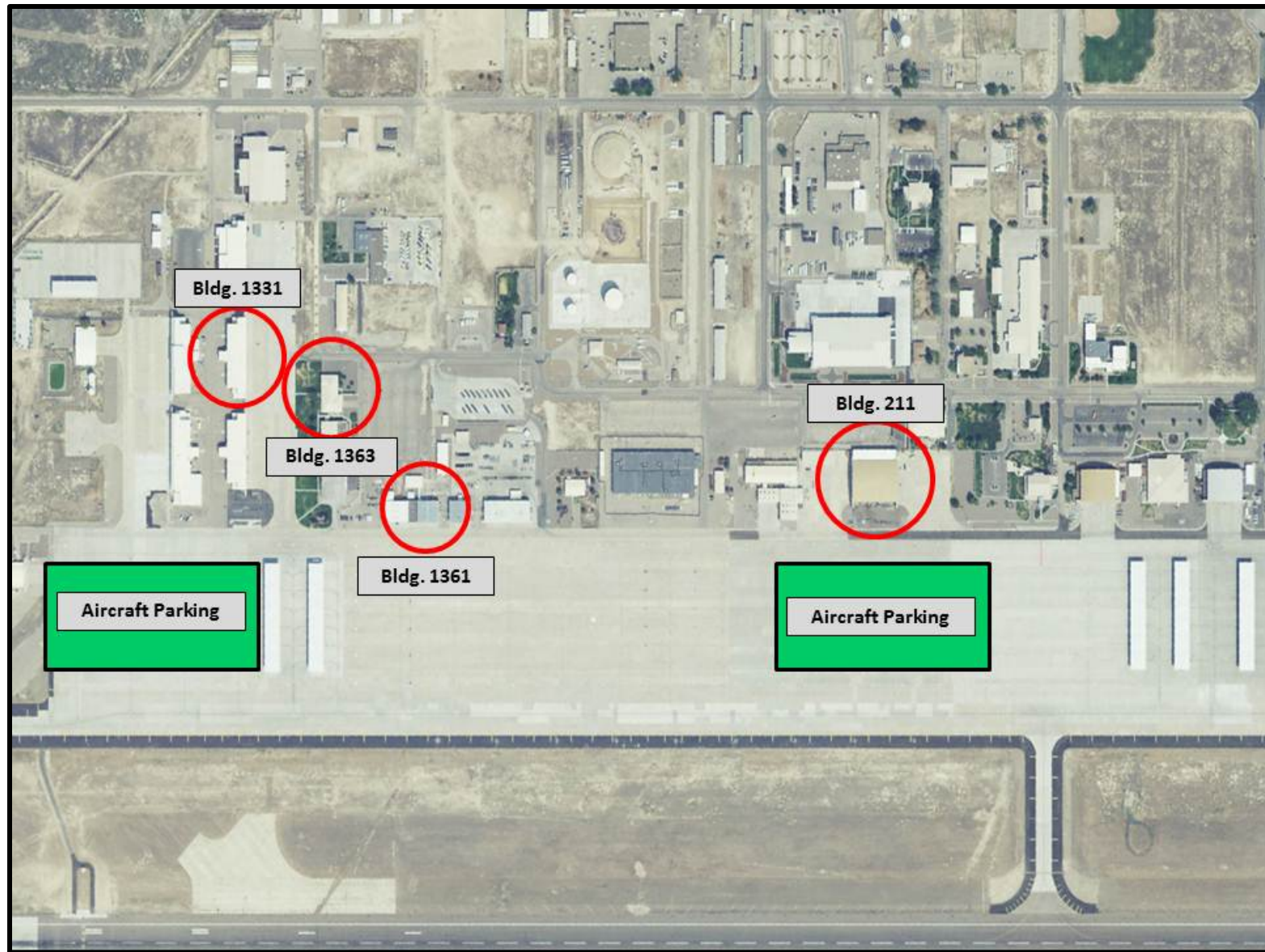




Figure 2.4-3. Mountain Home AFB – Installation Facilities



## **2.5 ALTERNATIVE C: SHAW AFB, SC**

Shaw AFB is an ACC installation located in the east central part of South Carolina, approximately 35 miles east of the capital city of Columbia (**Figure 2.5-1**). Shaw AFB is also located within the city limits of Sumter and is 10 miles west of the city's center. Shaw AFB manages the Poinsett Weapons Range, located approximately 10 miles south of the base.

Shaw AFB was activated on 30 August 1941 as one of the largest flying fields in the US to train pilots. In April 1951, Shaw AFB was designated as the 363d Tactical Reconnaissance Wing (TRW) which evolved into the 363d Fighter Wing (FW). The 363d FW later exchanged its Mustangs for Shaw's first jet aircraft, the P-84 Thunderjet. By 1957, RF-101 Voodoo aircraft were operating from Shaw AFB. These reconnaissance aircraft helped identify and track activities in Cuba during the Cuban Missile Crisis in the autumn of 1962. The RF-101 aircraft were replaced by RF-4C Phantoms in 1965. In 1982, the 363d FW received its first F-16 aircraft. During 1990, when Iraq invaded Kuwait, Shaw AFB F-16 Fighting Falcons were the first USAF jets available to stop the Iraqi ground forces. Following Desert Storm, Shaw AFB aircraft deployed to the Persian Gulf in support of Operation Southern Watch to enforce the Iraqi "No Fly Zone." Shaw AFB units were re-designated as the 20th Fighter Wing (20 FW) in the reorganization of the Air Force in December 1993.

Today, the 20 FW at Shaw AFB contains the 55th, 77th, and 79th Fighter Squadrons and has the primary mission to provide, project, and sustain combat-ready air forces. At Shaw AFB, the 20 FW is the host Wing and the USAF's Central Command (AFCENT) and HQ USARCENT (3rd Army) are the major tenants. The base's goals are to sustain the resources and relationships deemed appropriate to pursue national interests, and to provide for the command, control, and communications necessary to execute the missions of the Air Force, ACC, AFCENT, and the 20 FW (Shaw AFB 2011).

### **2.5.1 Range Facilities**

Poinsett Bombing Range and its associated MOA, as well as six other MOAs in the surrounding area, are the airspace and ranges proposed for use in the A-29 training beddown at Shaw AFB (**Figure 2.5-1**). Poinsett Bombing Range is located 13 NM (15 miles) south of Shaw AFB and is a night capable, class A conventional range currently used by Shaw AFB as an air-to-ground training area. This range encompasses 12,520 acres; however, only 427 of these acres are considered to be impact areas. The other range proposed for use if the A-29 training beddown would occur at Shaw AFB is the Townsend Range. This range is south of Shaw AFB in Georgia, and will be analyzed under the Moody AFB portion of this EA.

The Gamecock MOAs are also proposed for use in the A-29 training beddown (**Figure 2.5-1**). To the southeast of Shaw AFB lie Gamecock Bravo, Gamecock Charlie, Gamecock Delta MOAs and Robroy letter of agreement (LOA). Robroy is LOA airspace defined in the 20 FW/FAA Jacksonville Center LOA Special Procedures for 20th Fighter Wing Operations in the National Airspace System, and consists of a portion of Gamecock C and a portion of overlapping Gamecock D MOAs (Byers 2014). Gamecock Delta MOA lies approximately 25 NM (29 miles) southeast of Shaw AFB, and encompasses 709,397 acres. The eastern portion of Gamecock Delta MOA overlaps with the western portion of the Gamecock Charlie MOA, which lies 40 NM (46 miles) southeast of Shaw AFB and encompasses 565,314 acres, to form the Robroy LOA. Gamecock Bravo MOA encompasses 250,026 acres and lies approximately 55 NM (64 miles) from Shaw AFB and overlaps with the eastern portion of the Gamecock Charlie MOA. Each of

these overlapping MOAs has its own flight restrictions, including floors and ceilings. Approximately 22 NM (26 miles) to the north of Shaw AFB lies the 350,037 acre Gamecock India MOA, which is another proposed airspace for the A-29 training beddown. Seymour Johnson AFB in North Carolina manages and schedules the Gamecock Alpha MOA, which lies northeast of Shaw AFB and is also a proposed airspace for the A-29 training.

MTRs proposed for use by the A-29s at Shaw AFB include VR-087, VR-088, VR-097, VR-1059, and IR-035 (**Figure 2.5-1**).

## 2.5.2 Installation Facilities

Within the Shaw AFB alternative, there are two COAs for buildings and support facilities that would satisfy the needs of the Proposed Action. An existing dormitory (Building 407) would be used to house the AAF personnel (**Figure 2.5-2**). On-base housing options are limited for USAF military personnel that would be assigned to the A-29 training unit. **Table 2.5-1** presents the Facility COAs for Shaw AFB.

**Table 2.5-1. Shaw AFB – Facility COAs**

Building Function	COA 1	COA 2
Squadron Operations	Bldg. 713 & 721	Bldg. 106
Classrooms	Bldg. 611	Bldg. 713 & 1200
Hangar	Bldg. 611	Bldg. 1200
Aircraft Maintenance Unit	Bldg. 611	Bldg. 713
Flight Training Device	Bldg. 611	Bldg. 1200
Warehouse	Bldg. 707	Bldg. 707
Dormitory	Bldg. 407	Bldg. 407
Alternate Mission Equipment (AME) Storage & Maintenance	Bldg. 114	Bldg. 721

**COA 1:** This COA would use a combination of Buildings 713 and 721 to house Squadron Operations, Building 611 for classrooms, hangar, AMU, and FTD space, and Building 707 as a storage warehouse. AAF trainee pilots and maintainers would be housed in dormitory Building 407. Further, this option would displace Shaw's Operations Support Squadron (OSS) from Building 713, as well as their WLT from Building 611, tentatively to Building 106 and Building 1200 respectively (**Figure 2.5-2**). Minor modifications may be made to the interior of these buildings to properly equip them to support the A-29 training beddown; however, no modifications would be made to the exterior of these buildings, nor would any new construction occur as a result of this Proposed Action.

**COA 2:** This COA would use Building 106 to house Squadron Operations and, like COA 1, would use Building 707 as a storage warehouse and Building 407 as the dormitory for the AAF trainees. The remaining functions would be split between Buildings 713 and 1200, with classrooms and AMU in Building 713 and classrooms, hangar space, and FTD in Building 1200. Implementation of this COA would still displace OSS from Building 713, tentatively to Building 710. Additionally, placing Squadron Operations in Building 106 would require additional security for the A-29 training beddown due to the F-16 Unit Training Device (UTD) and Air Combat Maneuvering Instrumentation (ACMI) functions currently in that building (**Figure 2.5-2**). Minor modifications may be made to the interior of these buildings to properly equip them to support the A-29 training beddown; however, no modifications would be made to the exterior of these buildings, nor would any new construction occur as a result of this Proposed Action.



Figure 2.5-1. Shaw AFB – Proposed MTRs, Airspace, and Ranges

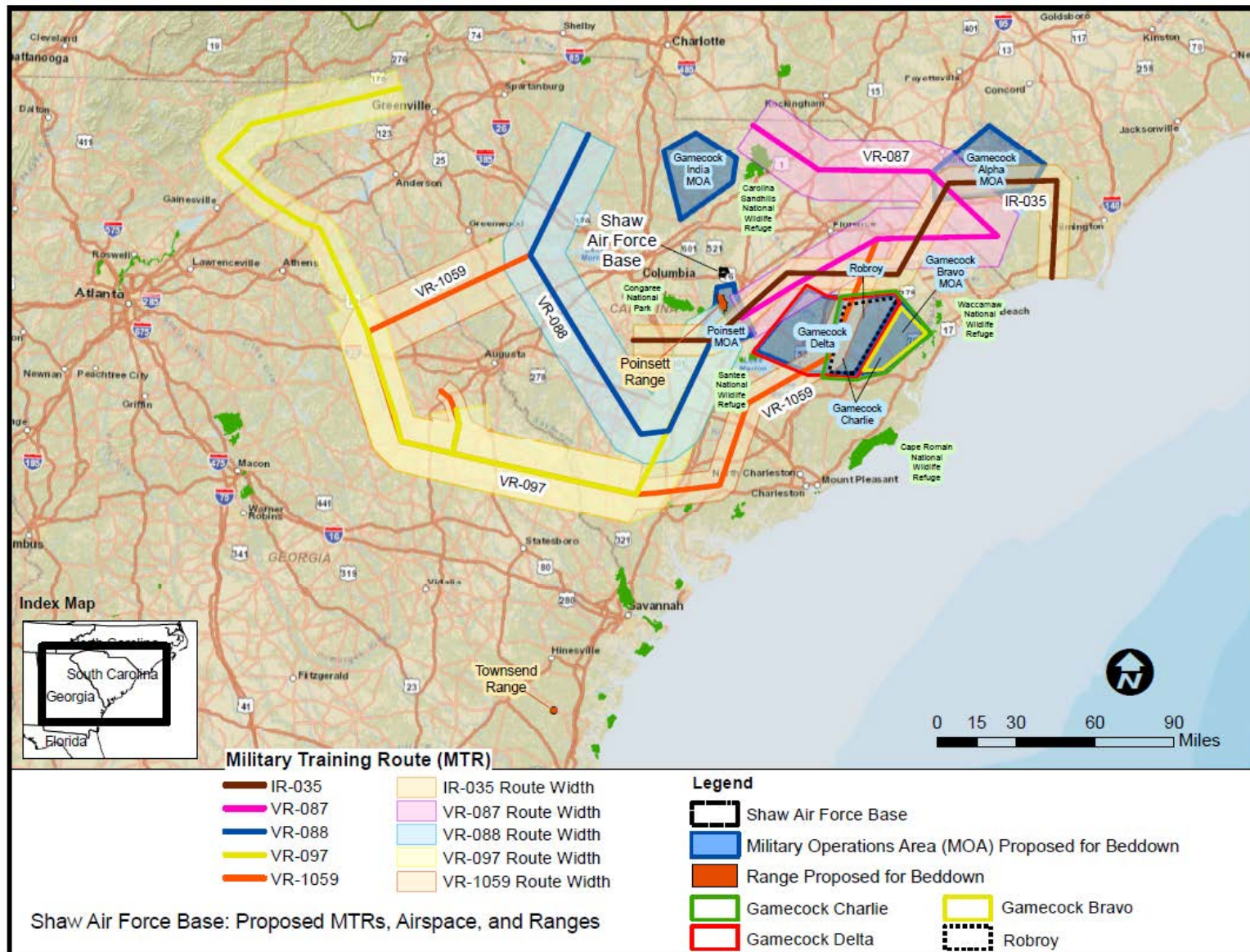
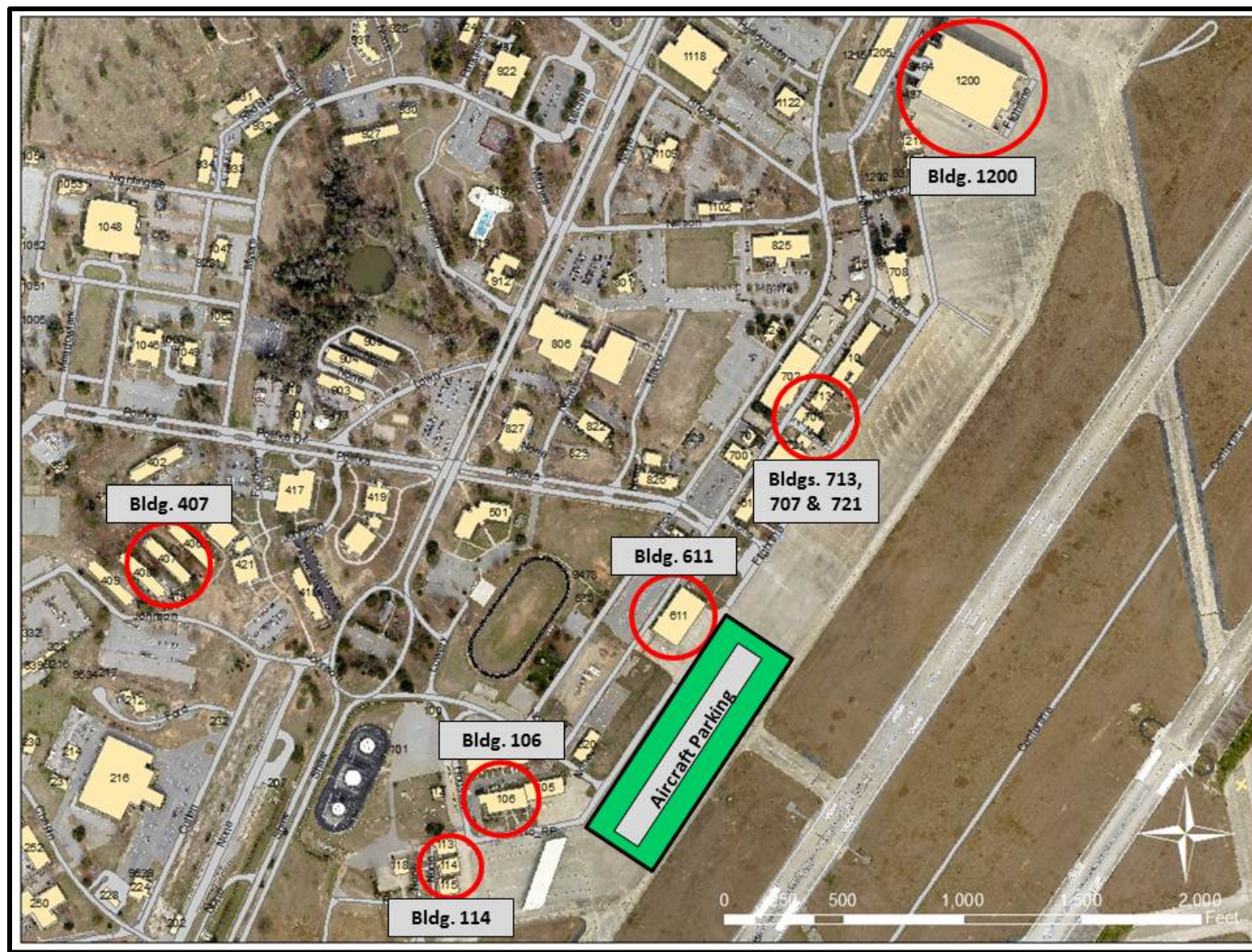




Figure 2.5-2. Shaw AFB – Installation Facilities



## **2.6 ALTERNATIVE D: NO-ACTION ALTERNATIVE**

The No-Action Alternative provides the existing baseline environment, as described in **Chapter 3**, to which the potential impacts of the action at each alternative basing location will be compared. Under this alternative, the LAS training program and A-29 aircraft would not be bedded down at any USAF base or ANG installation. Under the No-Action Alternative, the AAF LAS program would be unable to train sufficient AAF pilots to achieve IOC on schedule in January 2016, likely affecting GIRoA's ability to sustain effective indigenous, air-to-ground COIN support capability. Providing a training location in the CONUS is essential to delivering A-29 LAS capability before the AAF's current fleet of air-to-ground aircraft, the Mi-35, reaches the end of its service life. If the No-Action Alternative is selected, then baseline conditions would not change at any of the alternative basing locations.

## **2.7 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION**

All installations without a current air-to-ground fighter mission were eliminated from consideration. Any installation without a suitable bombing and gunnery training range available within 120 NM was also eliminated from initial consideration. Several ANG installations offered suitable facilities and range availability, but were eliminated because they did not offer 24-hour, 7-days per week, base operating support and maintenance operations.

Possible training locations outside the continental US (OCONUS) were considered but rejected. Bedding down the AAF LAS training program at such a location would make meeting the mission-driven compressed timeline of the effort infeasible.

### 3.0 AFFECTED ENVIRONMENT

This chapter describes the current conditions of the environmental resources, either man-made or natural, that would be affected by implementing the Proposed Action or the No-Action Alternative at each of the three proposed installations for the LAS Training Beddown.

The Region of Influence (ROI) for Moody AFB includes the base, ranges, and air space as described in **Section 2.3**, unless otherwise specified below for a particular resource area where a resource would have a different ROI.

The ROI for Mountain Home AFB includes the base, range complex, and air space as described in **Section 2.4**, unless otherwise specified below for a particular resource area where a resource would have a different ROI.

The ROI for Shaw AFB includes the base, ranges, and air space as described in **Section 2.5**, unless otherwise specified below for a particular resource area where a resource would have a different ROI.

Per guidelines established by the NEPA, CEQ regulations, 32 CFR §989 *EIAP*, the description of the affected environments and the associated impact analyses in this EA focus on only those aspects of the environment potentially subject to impacts.

Based on the scope of the Proposed Action, issues with minimal or no impacts were identified through a preliminary screening process. The following describes those resource areas not carried forward for a detailed analysis, along with the rationale for their elimination. Regardless of the alternative selected, the following resources would not be affected by the Proposed Action and are not discussed in detail in this EA:

- ◆ **Land Use/Air Installation Compatible Use Zone (AICUZ):** Land use generally refers to the human modification of land, or the use of land for preservation or protection of natural resources such as wildlife habitat, vegetation, or unique features. Human land uses include residential, commercial, industrial, agricultural, and recreational uses such as national parks, national forests, wilderness areas, and national wildlife refuges. Several national wildlife refuges, national monuments, and wilderness areas are found scattered throughout the states where the Proposed Action may occur. AFI 11-202 Vol 3 *General Flight Rules* restricts flights of less than 2,000 feet AGL over these areas with the exception of low-altitude tactical navigation (LATN) areas and MTRs. LATN areas would not be utilized for the A-29 training beddown. The Proposed Action would not affect recreational land use of these areas due to infrequent flights throughout the previously established MTRs. The AICUZ program is a DoD program that addresses public health and safety through an analysis of aircraft noise, aircraft accident potential, and land use development in the areas surrounding military installations. Under the Proposed Action, no changes to existing land use designations would be required. Impacts to national parks, forests, wilderness areas and wildlife refuges are not anticipated, as all training sorties would take place at or above 7,000 ft above mean sea level (msl). Therefore, land use and AICUZ are not carried forward for further analysis.
- ◆ **Biological Resources – Vegetation:** The Proposed Action would not entail any construction only interior modification to existing buildings. Ground disturbance and disturbance to vegetation would not occur and, therefore, no impacts to vegetation from the Proposed Action would occur.

- ◆ **Earth Resources:** Earth resources are defined as the topography, geology, and soils of a given area. Topography refers to terrain, dominant landforms, and other visible features. The geology of an area includes bedrock materials, mineral deposits and fossil remains. The Proposed Action does not include any ground disturbing construction or demolition activities. Additionally, A-29 specific restrictions would be incorporated in range management activities to ensure expended rounds or ricochets would remain in the range impact areas. Regular Operational Range Assessment Program analysis would continue to assess the potential for off-range migration of munitions constituents from live fire during range operations in accordance with DoD Directive 4715.11, *Environmental and Explosives Safety Management on Operational Ranges within the United States*, and the *Air Force Operational Range Assessment Plan*. With compliance with DoD and Air Force requirements, no impacts are anticipated with the implementation of the Proposed Action. Therefore, earth resources are not carried forward for a more detailed analysis.
- ◆ **Water Resources:** Water resources include natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources include groundwater, floodplains, surface water, stormwater runoff, wetlands, and Coastal Zone Management (CZM). The evaluation of water resources considers the quantity and quality of the resources and their demand for various purposes.

The Clean Water Act of 1972 (Public Law [PL] 95-217), the Safe Drinking Water Act of 1972 (PL 93-523) and Amendments of 1986 (PL 99-339), and the Water Quality Act of 1987 (PL 100-4) are the primary federal laws protecting the nation's waters. In addition, several applicable regulations and permits are in place to protect the quality and quantity of water in the US. These include: the National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit (40 CFR §§ 122-124); NPDES Industrial Permit and NPDES Municipal Separate Storm Sewer System Permit; US Environmental Protection Agency (USEPA), Subchapter-D Water Programs (40 CFR Sections 100-145); and USEPA, Subchapter-N Effluent Guidelines and Standards (40 CFR §§ 401-471).

A floodplain is the flat or nearly flat land adjacent to a stream or river that stretches from the banks of the channel to the base of the enclosing topography and experiences flooding during periods of high discharge. Floodplains typically are described as areas likely to be inundated by a particular flood. For example, a flood that has a 1-percent chance of occurring in any 1 year is considered a 100-year floodplain.

Under the Proposed Action, regardless of the alternative selected for implementation, neither construction, nor changes to the extent of impermeable surfaces, nor ground-disturbing activities that could disturb existing hydrological conditions would occur. The operational and maintenance activities of the LAS training program would not affect water resources. Additionally, A-29 specific restrictions would be incorporated in range management activities to ensure expended rounds or ricochets would remain in the range impact areas. Regular Operational Range Assessment Program analysis would continue to assess the potential for off-range migration of munitions constituents from live fire during range operations in accordance with DoD Directive 4715.11, *Environmental and Explosives Safety Management on Operational Ranges within the United States*, and the *Air Force Operational Range Assessment Plan*. With compliance with DoD, Air Force, federal and state requirements, no impacts to water resources are anticipated with the implementation of the Proposed Action.

As the selected alternative installations are not located within coastal zones, the proposed action would not impact CZM. Therefore, water resources analysis was not carried forward for more detailed analysis.

- ◆ **Socioeconomics:** Socioeconomics comprises the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are subject to fluctuations from regional birth and death rates and immigration and emigration of people. Economic activity typically encompasses employment, personal income, and economic growth. Impacts on these socioeconomic components also influence other issues such as housing availability and the provision of public services (e.g., schools, roads, and other infrastructure). Socioeconomic impacts would be considered significant if the Proposed Action resulted in a substantial shift in population trends or notably affected regional employment, earnings, or community resources.

The Proposed Action would include the relocation of approximately 81 permanent USAF personnel, their approximately 180 dependents, and approximately 45 contractors. The relocation of A-29 workforce personnel would result in an increase of the on-base workforce by approximately 2.1 percent for Moody AFB, 2.8 percent for Mountain Home AFB, and 1.5 percent for Shaw AFB. Therefore, the Proposed Action would result in negligible impacts to the following regional or local socioeconomic characteristics:

- Population levels and changes
- Employment/unemployment rates or employment by business sector
- Personal and household income
- Cost of housing, construction industry, or the real estate market
- Percentage of residents living below the poverty level
- Characteristics in terms of race and ethnicity

As such, these socioeconomic components are not carried forward for further analysis.

However, analysis on the availability of housing is carried forward since part of the alternative selection criteria requires that the installation has sufficient space to house the training activities and associated support personnel. Additionally, school capacity is also analyzed since the addition of school aged dependents may occur in local school systems as a result of the Proposed Action. Potential impacts associated with the redistribution of students to the local school district are in terms of capacity, staffing levels, and revenue. The ROI analyzed for housing and school capacity includes the installation and surrounding cities and counties.

- ◆ **Environmental Justice and Protection of Children:** Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires Federal agencies to consider disproportionately high adverse effects on the human or environmental health to minority and low-income populations resulting from implementation of a proposed action. As such, agencies are required to ensure any potential effects are identified and addressed.

The only potential impact to low-income or minority populations resulting from implementation of the Proposed Action would be related to a potential increase in off-base noise levels. However, under the Proposed Action, noise generated by aircraft operations would not perceptibly change around the airfields or under the airspace when compared to baseline conditions. Therefore, no significant or disproportionate impacts would be expected on environmental justice populations.



EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each Federal agency “(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.”

Under the Proposed Action, no adverse health or safety risks would be introduced by the beddown of the A-29 Flying Training Unit since off-base noise impacts (the only potential impact to children resulting from implementation of the Proposed Action) would not increase substantially from baseline conditions. Therefore, no or negligible impacts would be expected on children's health and safety.

In summary, there would be no disproportionately high adverse effects to minority and low-income populations and no disproportionate health risks or safety risks to children, therefore, these resources are not carried forward for further analysis.

The remainder of **Section 3.0** describes the current conditions of the environmental resources, either man-made or natural, that would be affected by implementing the Proposed Action or the No-Action Alternative at each of the three proposed installations for the A-29 training beddown. The following resources are addressed:

- ◆ Airspace and Range Management
- ◆ Noise
- ◆ Air Quality
- ◆ Safety and Occupational Health
- ◆ Hazardous Materials / Waste
- ◆ Biological / Natural Resources
- ◆ Cultural Resources
- ◆ Socioeconomic Resources (Housing & Schools)
- ◆ Infrastructure / Utilities
- ◆ Climate Change

### **3.1 AIRSPACE AND RANGE MANAGEMENT**

**Airspace Management:** Airspace management is defined as the direction, control, and handling of flight operations in the navigable airspace that overlies the US and its territories. “Navigable airspace” is airspace above the minimum altitudes of flight prescribed by regulations under US Code (USC) Title 49, Subtitle VII, Part A, and includes airspace needed to ensure safety in the takeoff and landing of aircraft, as defined in Federal Aviation Administration (FAA) Order 7400.2E (49 USC). The US Congress has charged the FAA to administer this limited natural resource in the interest of the public, as necessary to ensure the safety of aircraft and its efficient use (Moody AFB 2012). The FAA has designated four types of airspace within the US: Controlled, Special Use, Other, and Uncontrolled airspace.

Controlled airspace is the airspace area in which Air Traffic Control (ATC) service is provided to Instrument Flight Rules (IFR) flights and to Visual Flight Rules (VFR) flights in accordance with the particular airspace classification (Moody AFB 2012a). Controlled airspace is categorized into five separate classes: Classes A through E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place-to-place.

Uncontrolled airspace is designated Class G airspace and has no specific prohibitions associated with its use.

Special Use Airspace (SUA) is designated airspace within which a special character of flight activities is conducted that requires separation from non-participating aircraft. Prohibited Areas, Restricted Areas, Warning Areas, Alert Areas and MOAs are examples of SUA. SUA consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas (CFAs), SUA is depicted on aeronautical charts, including hours of operation, altitudes, and the agency controlling the airspace. All SUA Airspace descriptions are contained in FAA Order 7400.8.

Prohibited and Restricted Areas are regulatory SUA and are established in FAR Part 73 through the rulemaking process. Warning Areas, CFAs, and MOAs are non-regulatory. This classification of airspace includes MTRs, Air Traffic Control Assigned Airspace (ATCAA), aerial refueling (AR) tracks, slow routes, and LATN areas. LATNs cover large areas of uncontrolled airspace and facilitates operational flexibility (flight patterns are not confined to narrow flight corridors and direction of flight is not restricted). LATN areas would not be utilized for the A-29 training beddown.

MOAs are airspace of defined vertical and lateral limits outside of controlled airspace that are used to separate certain military flight activities from IFR traffic, and to identify for VFR traffic the areas where concentrated military aircraft operations may occur. When a MOA is active, IFR traffic may be cleared to enter and pass through the area if adequate IFR separation criteria can be met. Nonparticipating VFR aircraft are not prohibited from entering an active MOA; however, extreme caution is advised when such aircraft transit the area during military operations. All MOAs within the US are depicted on sectional aeronautical charts identifying the exact area, the name of the MOA, altitudes of use, published hours of use, and the corresponding controlling agency.

**Range Management:** A range is an area established for operations, training, research and development, and test and evaluation of military systems, personnel, tactics, munitions, and explosives. AFI 13-212, *Range Planning and Operations*, provides guidance for the planning, operations, management, safety, equipment, facilities, and security of Air Force ranges. AFI 12-212 requires preparation of a Comprehensive Range Plan, which addresses various items including, but not limited to, scheduling issues, modernization planning, safety, noise management, public affairs, and encroachment. AFD 13-2, *Air Traffic, Airfield, Airspace, and Range Management* establishes AF policy and provides guidance for Airspace/Range Management and Airfield Operations to include Air Traffic Control and Airfield Management.

### **3.1.1 Alternative A (Preferred Alternative): Moody AFB**

#### **3.1.1.1 Airspace Management**

The locations of the airspace analyzed for the A-29 training beddown at Moody AFB are shown in **Figure 2.3-1**. There are two restricted areas proposed for use by the A-29s at Moody AFB: R-3007, which is associated with Townsend Range; and R-3008, which is associated with Grand Bay Range. Five MOAs used by Moody AFB have been proposed for use by the A-29 training beddown, these are: Coastal 1 East and Coastal 1 West MOAs; Moody 1 MOA, which includes Thud, Warhawk, and Corsair work areas, as well as Mustang and Sabre corridors; Moody 2 MOA, which consists of Hog North and Hog South work areas, and Moody 3 MOA. Not all proposed airspace would be utilized for training. MTRs would also be used as a part of the A-29 LAS training beddown. At Moody AFB, the MTRs proposed for use are VR-1004, VR-1001 (A through H) and VR-1003 (A through F and L through R), as well as IR-016 (A through D). Townsend Range and the Coastal 1 East and West MOAs, VR-1001,

VR-1003 and VR-1004 are managed and scheduled by the US Navy. All other airspace areas proposed for use in the A-29 training beddown are managed and scheduled by Moody AFB (Moody AFB 2012a). **Table 3.1-1** shows the altitudes for the MOAs and MTRs near Moody AFB that could be used for A-29 training.

**Table 3.1-1. Moody AFB - MOA and MTR Altitudes**

MOA Airspace Unit		Floor	Ceiling
Coastal 1 East MOA		300 ft AGL	17,999 ft MSL
Coastal 1 West MOA		300 ft AGL	17,999 ft MSL
Moody 1 MOA		8,000 ft MSL	23,000 ft MSL
Moody 2 MOA	Hog North	500 ft AGL	7,999 ft MSL
	Hog South	100 ft AGL	7,999 ft MSL
Moody 3 MOA		8,000 ft MSL	17,999 ft MSL
MTR Airspace Unit		Operational Floor <sup>1</sup>	Ceiling
VR-1004		500 ft AGL	1,500 ft AGL
VR-1001		500 ft AGL	1,500 ft AGL
VR-1003		500 ft AGL	1,500 ft AGL
IR-016		500 ft AGL	2,000 ft MSL

Source: Moody AFB 2012a

<sup>1</sup>MTR floor may be lower than listed, however A-29 trainees will not fly below 500 ft AGL.

**Table 3.1-2** shows the current annual baseline sortie data for Moody AFB's airspace.

**Table 3.1-2. Moody AFB - Annual Baseline Sorties**

Airspace Unit		Baseline Sorties
Coastal 1 East MOA		1,078
Coastal 1 West MOA		1,078
Moody 1 MOA		1,016
Moody 2 MOA	Hog North	1,547
	Hog South	1,560
Moody 3 MOA		68
Townsend Range		1,068
Grand Bay Range		5,906

Source: FAA 2013



### 3.1.1.2 Range Management

Grand Bay Range currently accepts all training munitions required for the Proposed Action. Townsend Range accepts all training munitions with the exception of the GBU-12 (GBU-12 capability is currently being validated by the Weapons Danger Zone Program). FY13 munitions expenditures for those training munitions required for the Proposed Action at Grand Bay Range and Townsend Range are shown in **Table 3.1-3** and **Table 3.1-4**.

**Table 3.1-3. Grand Bay Range – FY13 Munitions Expended**

Munitions	FY13 Use
BDU-33	4,656
2.75" Rockets	764
BDU-50/GBU-12	158
.50 Caliber Ammunition	73,870

Source: USAF 2013b

**Table 3.1-4. Townsend Range – FY13 Munitions Expended**

Munitions	FY13 Use
BDU-33	1,165
2.75" Rockets	179
BDU-50/GBU-12 <sup>1</sup>	90
.50 Caliber Ammunition <sup>2</sup>	0

Source: Biggers 2014

<sup>1</sup> GBU-12s are not currently accepted at Townsend Range.

<sup>2</sup> While no .50-cal activity is listed for FY13, .50-cal ammunition is accepted at Townsend Range and has been used in the past.

## 3.1.2 Alternative B: Mountain Home AFB

### 3.1.2.1 Airspace Management

Proposed airspace for the A-29 training beddown at Mountain Home AFB is shown in **Figure 2.4-1**. There are two restricted areas within the Mountain Home Range Complex that are proposed for use: R-3202, which is associated with Saylor Creek Range; and R-3204, which is associated with Juniper Butte Range. Eight MOAs used by Mountain Home AFB have been proposed for use by the A-29 training beddown, these are: Saddle A, Saddle B, Paradise North, Paradise South, Owyhee North, Owyhee South, Jarbidge North and Jarbidge South MOAs. Not all proposed airspace would be utilized for training. MTRs proposed for use at Mountain Home AFB are VR-316, VR-319, VR-1300, VR-1301 and VR-1302, as well as IR-303. All airspace areas proposed for use are managed and scheduled by Mountain Home AFB, with the exception of Saddle A and Saddle B MOAs which are managed and scheduled by the Idaho ANG (USAF 2013a). **Table 3.1-5** shows the altitudes for the MOAs and MTRs near Mountain Home AFB that could be used for A-29 training.

**Table 3.1-5. Mountain Home AFB – MOA and MTR Altitudes**

<b>MOA Airspace Unit</b>	<b>Floor</b>	<b>Ceiling</b>
Saddle A MOA	10,000 ft MSL	18,000 ft MSL
Saddle B MOA	8,000 ft MSL	18,000 ft MSL
Paradise North MOA	10,000 ft MSL	17,999 ft MSL
Paradise South MOA	10,000 ft MSL	17,999 ft MSL
Owyhee North MOA	100 ft AGL	17,999 ft MSL
Owyhee South MOA	10,000 ft MSL	17,999 ft MSL
Jarbridge North MOA	100 ft AGL	17,999 ft MSL
Jarbridge South MOA	10,000 ft MSL	17,999 ft MSL
<b>MTR Airspace Unit</b>	<b>Operational Floor<sup>1</sup></b>	<b>Ceiling</b>
VR-316	500 ft AGL	8,000 – 10,500 ft MSL
VR-319	500 ft AGL	8,000 – 10,500 ft MSL
VR-1300	500 ft AGL	1,500 ft AGL
VR-1301	500 ft AGL	1,500 ft AGL
VR-1302	500 ft AGL	1,500 ft AGL
IR-303	500 ft AGL	10,000 – 14,000 ft MSL

Source: USAF 2013a

<sup>1</sup> MTR floor may be lower than listed, however A-29 trainees will not fly below 500 ft AGL.

**Table 3.1-6** shows the current annual baseline sortie data for Mountain Home AFB's airspace.

**Table 3.1-6. Mountain Home AFB – Annual Baseline Sorties**

<b>Airspace Unit</b>	<b>Baseline Sorties</b>
Saddle A MOA	4,566
Saddle B MOA	4,566
Paradise North MOA	5,898
Paradise South MOA	5,611
Owyhee North MOA	7,152
Owyhee South MOA	5,630
Jarbridge North MOA	8,033
Jarbridge South MOA	5,653
Saylor Creek Range	8,044
Juniper Butte Range	8,037

Source: FAA 2013

### 3.1.2.2 Range Management

Saylor Creek Range currently accepts all training munitions required for the Proposed Action. Juniper Butte Range only accepts BDU-33. FY13 munitions expenditures for those training munitions required for the Proposed Action at Saylor Creek Range and Juniper Butte Range are shown in **Table 3.1-7** and **Table 3.1-8**.

**Table 3.1-7. Saylor Creek Range – FY13 Munitions Expended**

Munitions	FY13 Use
BDU-33	4,345
2.75" Rockets	889
BDU-50/GBU-12	276
.50 Caliber Ammunition <sup>1</sup>	0

Source: Viall 2014

<sup>1</sup> While no .50-cal activity is listed for FY13, .50-cal ammunition is accepted at Saylor Creek Range and has been used in the past.

**Table 3.1-8. Juniper Butte Range – FY13 Munitions Expended**

Munitions	FY13 Use <sup>1</sup>
BDU-33	1,146
2.75" Rockets	--
BDU-50/GBU-12	--
.50 Caliber Ammunition	--

Source: Viall 2014

<sup>1</sup> BDU-33 is the only munition accepted on Juniper Butte Range that is required for the Proposed Action.

### 3.1.3 Alternative C: Shaw AFB

#### 3.1.3.1 Airspace Management

Airspace areas proposed for use in the A-29 training beddown at Shaw AFB are shown in **Figure 2.5-1**. There are two restricted areas within the Shaw AFB airspace that are proposed for use: R-6002, which is associated with Poinsett Range; and R-3007, which is associated with Townsend Range. Six MOAs and one LOA used by Shaw AFB have been proposed for use by the A-29 training beddown: Gamecock Alpha (A), Gamecock Bravo (B), Gamecock Charlie (C), Gamecock Delta (D), Poinsett, and Gamecock India (I) MOAs, and Robroy LOA. Not all proposed airspace would be utilized for training. MTRs proposed for use at Shaw AFB are VR-087 and VR-088, VR-097, and VR-1059, as well as IR-035. The Gamecock A MOA is managed and scheduled by Seymour Johnson AFB, North Carolina, and Townsend Range is managed and scheduled by the US Navy. All other airspace areas proposed for the A-29 training beddown are managed and scheduled by Shaw AFB (USAF 2013a). **Table 3.1-9** shows the altitudes for the MOAs and MTRs near Shaw AFB that could be used for A-29 training.

**Table 3.1-9. Shaw AFB – MOA and MTR Altitudes**

MOA Airspace Unit	Floor	Ceiling
Gamecock A MOA	7,000 ft MSL	22,000 ft MSL
Gamecock B MOA	10,000 ft MSL	17,999 ft MSL
Gamecock C MOA	100 ft AGL	10,000 ft MSL
Gamecock D MOA	10,000 ft MSL	17,999 ft MSL
Robroy LOA	100 ft AGL	22,000 ft MSL
Poinsett MOA	300 ft AGL	2,500 ft MSL
Gamecock I MOA	100 ft AGL	6,000 ft MSL
MTR Airspace Unit	Operational Floor <sup>1</sup>	Ceiling
VR-087	500 ft AGL	6,500 – 8,000 ft MSL
VR-088	500 ft AGL	6,500 – 8,000 ft MSL
VR-097	500 ft AGL	1,500 – 8,000 ft MSL
VR-1059	500 ft AGL	1,500 ft MSL
IR-035	500 ft AGL	3,000 – 4,000 ft MSL

Source: USAF 2013a

<sup>1</sup> MTR floor may be lower than listed, however A-29 trainees will not fly below 500 ft AGL.

**Table 3.1-10** shows the current annual baseline sortie data for Shaw AFB.

**Table 3.1-10. Shaw AFB – Annual Baseline Sorties**

Airspace Unit	Baseline Sorties
Gamecock A MOA	4,218
Gamecock B MOA	50
Gamecock C MOA	2,765
Gamecock D MOA	2,752
Robroy LOA <sup>1</sup>	N/A
Poinsett MOA	753
Gamecock I MOA	1,253
Poinsett Range	953
Townsend Range	1,068

Source: FAA 2013

<sup>1</sup> Sortie data not collected for LOA airspace.

### 3.1.3.2 Range Management

Poinsett Range currently accepts all training munitions required for the Proposed Action. FY13 munitions expenditures for those training munitions required for the Proposed Action at Poinsett Range are shown in **Table 3.1-11**.

**Table 3.1-11. Poinsett Range – FY13 Munitions Expended**

<b>Munitions</b>	<b>FY13 Use</b>
BDU-33	435
2.75" Rockets <sup>1</sup>	0
BDU-50/GBU-12	180
.50 Caliber Ammunition	65

Source: Connolly 2014

<sup>1</sup>While no 2.75" rocket activity is listed for FY13, 2.75" rockets are accepted at Poinsett Range and have been used in the past.

## 3.2 NOISE

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the ear. Sound is all around us and noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although exposure to very high sound levels can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual.

Noise and sound are expressed in decibels (dB), which are logarithmic units. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB; sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 to 140 dB are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. Typically, a person perceives a doubling (or halving) of the sound's loudness when there is a 10 dB change in sound level.

All sounds have a spectral content, meaning their magnitude or level changes with frequency, where frequency is measured in cycles per second or hertz (Hz). To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" (dBA) scale that filters out very low and very high frequencies to replicate human sensitivity. It is common to add the "A" to the measurement unit to identify that the measurement was made with this filtering process. For low frequency noise, "C-weighting" (dBC) is typically applied for impulsive sounds such as sonic booms and ordnance detonation. In accordance with DoD guidelines and standard practice for environmental impact analysis documents, this noise analysis utilizes the following, A-weighted noise descriptors or metrics: Day-Night Average Sound Level (DNL), Sound Exposure Level (SEL), Maximum Sound Level ( $L_{max}$ ), and Onset-Rate Adjusted Monthly Day-Night Average Sound Level ( $L_{dmnr}$ ).

### Noise Metrics

**Maximum Sound Level ( $L_{\max}$ )** – the highest A-weighted, sound level measured during a single event in which the sound level changes value with time, e.g., an aircraft overflight.

**Sound Exposure Level (SEL)** – a composite metric that represents both the amplitude of a sound and its duration. Noise events such as aircraft overflights have two main characteristics: a sound level that changes throughout the event and the duration during which the event is heard. The SEL metric provides a measure of the net impact of the entire acoustic event, but it does not directly represent the sound level heard at any given time. The SEL is useful for comparing different noise events, e.g., different aircraft types or operations, whose duration or amplitude may be different.

**Day-night Average Sound Level (DNL)** – a composite metric that accounts for all noise events in a 24-hour period, and takes into consideration the increased human sensitivity to noise at night by applying a 10-dB penalty to nighttime events occurring between 10:00 p.m. and 7:00 a.m.

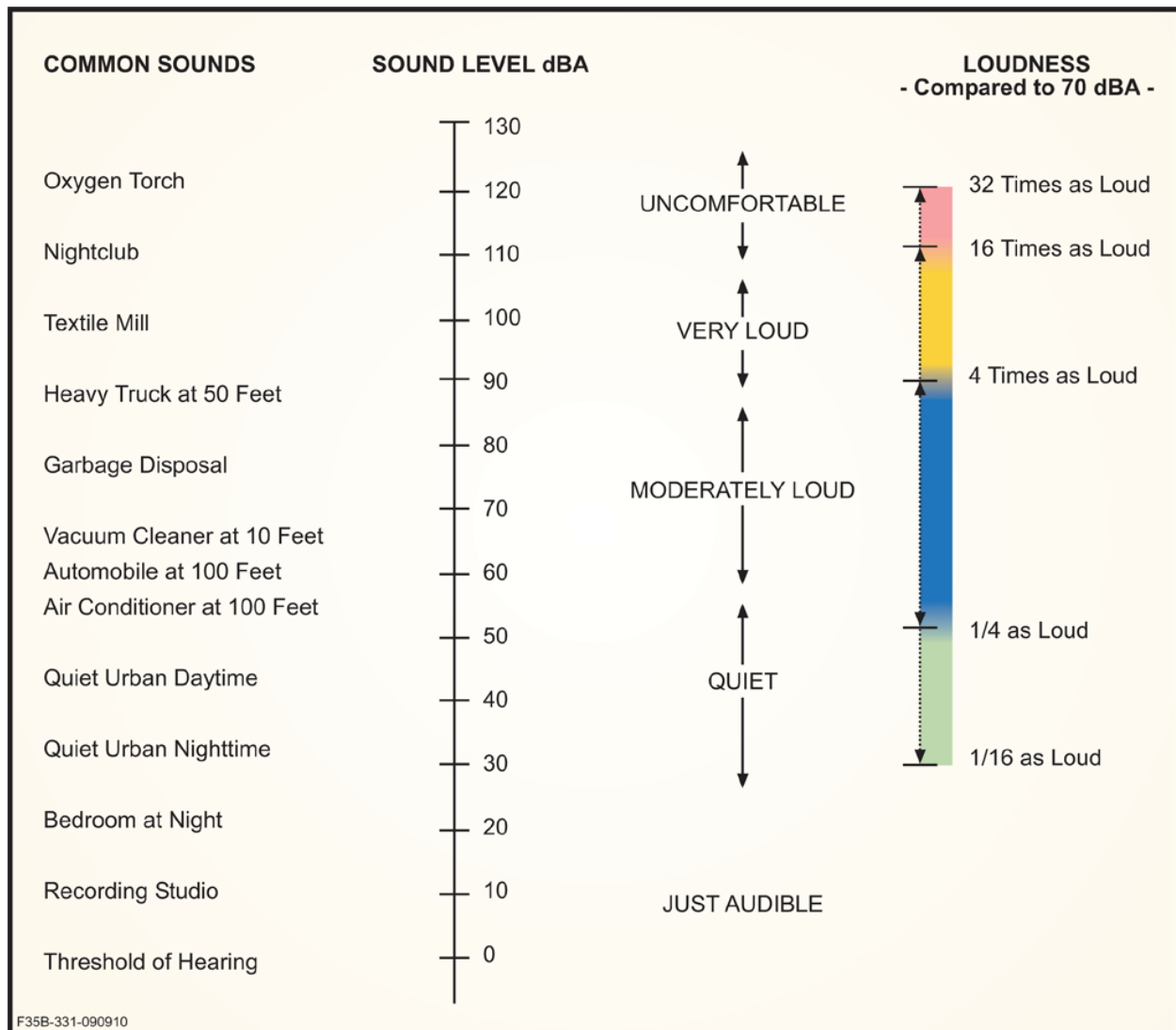
**Onset-Rate Adjusted Monthly Day-Night Average Sound Level ( $L_{\text{dnmr}}$ )** – similar to DNL, it is a cumulative noise metric devised to account for the “surprise” effect of the sudden onset of aircraft noise events on humans and the sporadic nature of Special Use Airspace (SUA) activity. Whereas aircraft operations at airfields tend to be continuous or patterned, operations in airspace are sporadic and dispersed.  $L_{\text{dnmr}}$  also accounts for the specific effects of low-altitude and high-speed operations that can occur in airspace such as MOAs or Restricted Areas. Because military jet aircraft can exhibit a rate of increase in sound level (onset rate) of up to 150 dB per second, the  $L_{\text{dnmr}}$  metric is adjusted to account for the startle effect with addition of up to 11 dB to the normal SEL.

**Noise Event** – a single event with noise source being perceived above ambient sound level. Generally, it is characterized by sound level increase up to maximum sound level ( $L_{\max}$ ) followed by decrease back to ambient.

### Affected Environment

The affected environment for noise includes the airfield runways and area immediately surrounding the runways where aircraft takeoff, land, and conduct pattern work and along flight tracks within the vicinity of the runways as well as areas under the SUA, including MOAs, MTRs and ranges detailed in **Section 3.1**. The airspace analyzed in this EA is currently in existence; no new airspace is required under the Proposed Action.

The predominant noise sources at each of the bases consist of aircraft operations, both at and around the airfield. Other components such as infrastructure upgrades, aircraft ground support equipment for maintenance purposes, and vehicle traffic would produce noise, but such noise generally represents a transitory and negligible contribution to the average noise environment. Therefore noise from vehicles and construction were not assessed as part of the Proposed Action. Areas under the SUAs are generally rural and sparsely populated. Noise under the airspace is predominately due to vehicular traffic along roadways and highways. Response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day. Typical noise sound pressure levels are shown in **Figure 3.2-1**.

**Figure 3.2-1. Typical A-weighted Sound Levels of Common Sounds**

Sources: Harris 1979, FICAN 1997.

Baseline annual operations of airfield activity for based and transient aircraft at the three candidate locations as well as proposed A-29 airfield activity is shown in **Table 3.2-1**.

**Table 3.2-1. Annual Airfield Operations**

Scenario	Aircraft Type	Departure			Arrival			Closed Pattern			Total		
		Day (0700-2159)	Night (2200-0659)	Total	Day (0700-2159)	Night (2200-0659)	Total	Day (0700-2159)	Night (2200-0659)	Total	Day (0700-2159)	Night (2200-0659)	Total
Proposed	A-29	3,101	31	3,132	3,101	31	3,132	9,834	102	9,936	16,036	164	16,200
Baseline	<b>Moody AFB</b>												
	A-10A	9,900	0	9,900	9,503	397	9,900	4,435	185	4,620	23,838	582	24,420
	C-130J	546	54	600	228	372	600	840	2,760	3,600	1,614	3,186	4,800
	HH-60	1,339	41	1,380	819	561	1,380	2,784	0	2,784	4,942	602	5,544
	Transient	219	14	233	221	12	233	58	2	60	498	28	526
	Total	12,004	109	12,113	10,771	1,342	12,113	8,117	2,947	11,064	30,892	4,398	35,290
	<b>Mountain Home AFB</b>												
	F-15E	3,469	2,006	5,475	5,475	0	5,475	7,228	0	7,228	16,172	2,006	18,178
	F-15SG	1,703	895	2,598	1,703	895	2,598	3,205	0	3,205	6,611	1,790	8,401
	Transient	365	0	365	363	0	363	3,118	0	3,118	3,846	0	3,846
	Total	5,537	2,901	8,438	7,541	895	8,436	13,551	0	13,551	26,629	3,796	30,425
	<b>Shaw AFB</b>												
	F-16C	16,877	596	17,473	16,651	821	17,473	7,155	0	7,155	40,683	1,417	42,100
	Transient	318	60	378	366	12	378	706	0	706	1,390	72	1,462
	Total	17,195	656	17,851	17,017	833	17,851	7,861	0	7,861	42,073	1,489	43,562

### 3.2.1 Alternative A (Preferred Alternative): Moody AFB

#### 3.2.1.1 Moody Airfield Noise

The baseline DNL noise contour map is shown in **Figure 3.2-2**. Acreage and population counts for areas under the baseline DNL contours are listed in **Table 3.2-2**.

As part of the 2012 Joint Land Use Study (JLUS), Lowndes County created a specific zoning classification for the Base and the surrounding properties. In total there are three Moody Activity Zone (MAZ) zoning districts established within Lowndes County. The MAZ-1 district covers the base, the Clear Zones and Accident Potential Zone 1. MAZ-2 extends out from MAZ-1, includes Accident Potential Zone II, and follows the Noise Impact Area west of the Base. MAZ-3 extends west from the terminus of MAZ-2 to Cat Creek Road beginning at a point just north of the intersection with Buckhead Drive and proceeding north to Cat Creek where it follows the Creek north to the county line. The MAZ are included in **Figure 3.2-2**. The Proposed Action would not require change to the MAZ.



**Table 3.2-2. Moody AFB Baseline Acreage and Population Counts**

DNL	Population <sup>1,2,3</sup>	Acreage <sup>3</sup>		
		On-Base	Off-Base	Total
65-70	38	975	584	1,559
70-75	3	738	49	787
75-80	0	273	0	273
80-85	0	79	0	79
85+	0	30	0	30
<b>Total</b>	<b>41</b>	<b>2,095</b>	<b>633</b>	<b>2,728</b>

<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

<sup>3</sup> Values rounded to nearest whole number and may not sum to total

### 3.2.1.2 Moody Airspace Noise

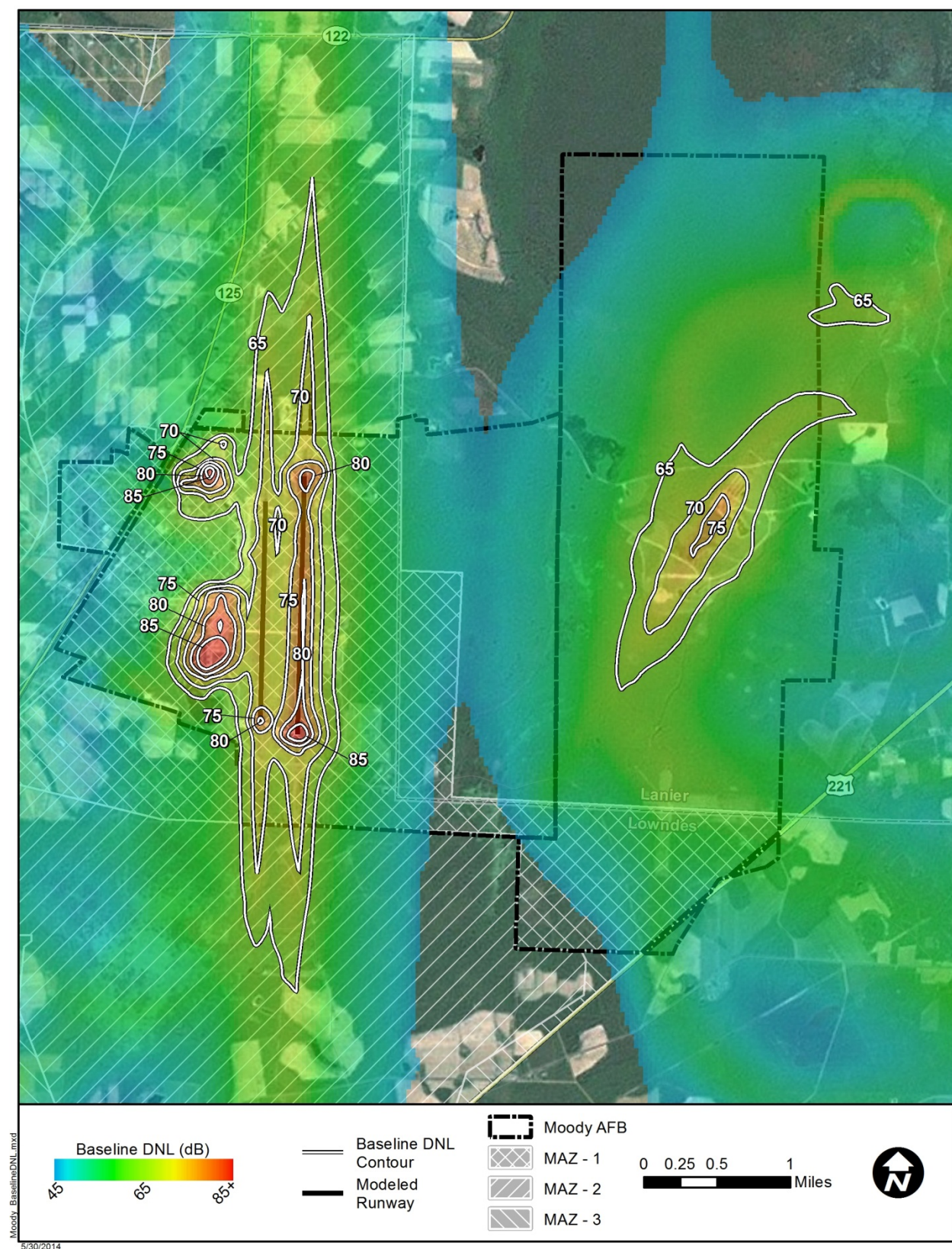
The ROI, as indicated below, for the Proposed Action includes one MOA, four MTRs and two Restricted Areas used by Moody AFB airmen and the land areas underneath this airspace. Not all available airspace, as shown on **Figure 2.3-1**, would be utilized for training.

**MOAs.** Training for A-29 pilots would utilize airspace within Moody 1 MOA, specifically Thud, Mustang, Warhawk and Corsair work areas.

**MTRs.** Training would utilize portions of four MTRs near Moody including IR-016 (A through D), VR-1004, VR-1001 (A through H) and VR-1003 (A through F and L through R). MTRs would be used for specific training objectives and not for regular transit between the base and airspace.

**Restricted Areas.** Two Restricted Areas are currently used by Moody AFB airmen: R-3008, associated with Grand Bay Range; and R-3007, associated with Townsend Range (**Figure 2.3-1**). The airspaces associated with Grand Bay Range and Townsend Range are composed of multiple Restricted Areas. Grand Bay Range is a complex of four Restricted Areas (i.e., R-3008A, R-3008B, R-3008C, and R-3008D). For the purposes of this EA, the entire complex is referred to as Grand Bay Range (i.e., R-3008). Townsend Range is a complex of four Restricted Areas (i.e., R-3007A, R-3007B, R-3007C, and R-3007D). For the purposes of this EA, the entire complex is referred to as Townsend Range (i.e., R-3007).

Figure 3.2-2. Moody AFB Baseline DNL Noise Contour Map



The baseline conditions are summarized in **Table 3.2-3**. As shown, none of the noise levels reach 65 dBA  $L_{dnmr}$  in the assessed areas under baseline conditions except for restricted airspace over the target area on Grand Bay Range (R-3008A).

**Table 3.2-3. Moody AFB Baseline Busy Month  $L_{dnmr}$**

Airspace	$L_{dnmr}$ (dBA) <sup>1</sup>
Moody 1 MOA <sup>2</sup>	< 45
Moody 2 North MOA	55
Moody 2 South MOA	54
Moody 3 MOA	< 45
Live Oak MOA	< 45
Bulldog A MOA	< 45
Bulldog B MOA	< 45
Coastal 1 East MOA	51
Coastal 1 West MOA	53
Grand Bay Range (R-3008A)	70
Grand Bay Range (R-3008B)	64
Grand Bay Range (R-3008C-D) <sup>3</sup>	49
Townsend Range (R-3007) <sup>4</sup>	< 45

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> Moody 1 MOA overlaps Moody AFB

<sup>3</sup> The noise levels shown for Grand Bay Range are for R-3008C and D combined.

<sup>4</sup> The noise levels shown for Townsend Range are for R-3007A, B, C, and D combined.

## 3.2.2 Alternative B: Mountain Home AFB

### 3.2.2.1 Mountain Home Airfield Noise

The baseline DNL noise contour map is shown in **Figure 3.2-3**. Acreage and population counts for areas under the baseline DNL are listed in **Table 3.2-4**.

**Table 3.2-4. Mountain Home AFB Baseline Acreage and Population Counts**

DNL	Population <sup>1,2,3</sup>	Acreage <sup>3</sup>		
		On-Base	Off-Base	Total
65-70	5	1,157	8,861	10,018
70-75	1	1,453	3,955	5,408
75-80	5	1,212	1,273	2,485
80-85	0	738	126	863
85+	0	1,004	0	1,004
<b>Total</b>	<b>11</b>	<b>5,564</b>	<b>14,214</b>	<b>19,778</b>

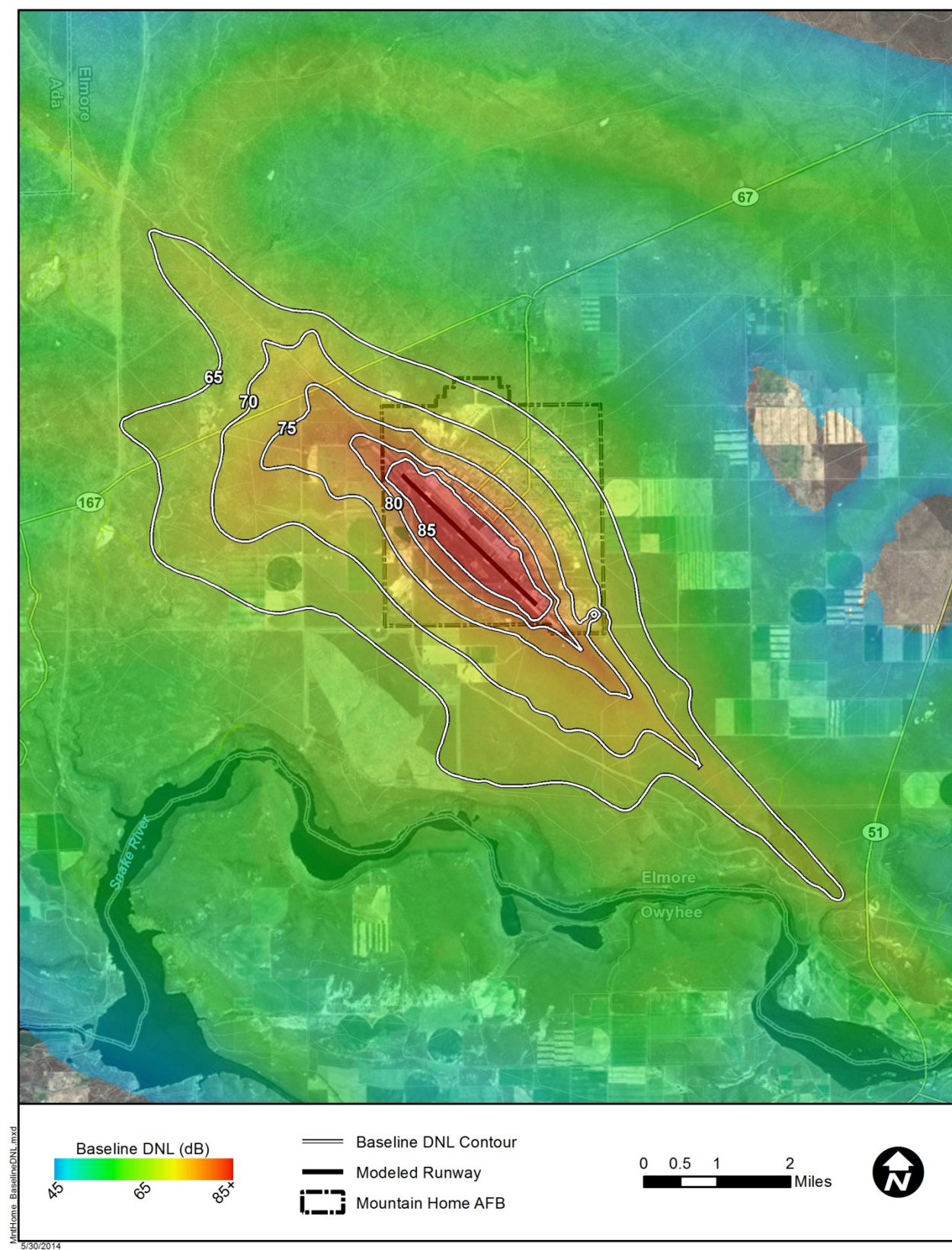
<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

<sup>3</sup> Values rounded to nearest whole number and may not sum to total



**Figure 3.2-3. Mountain Home AFB Baseline DNL Noise Contour Map**



### 3.2.2.2 Mountain Home Airspace Noise

The ROI, as indicated below, for the Proposed Action includes two MOAs, six MTRs and two Restricted Areas used by Mountain Home AFB airmen and the land areas underneath this airspace. Not all available airspace, as shown on **Figure 2.4-1**, would be utilized for training. The baseline conditions are summarized in **Table 3.2-5**.

**MOAs.** Training for A-29 pilots would utilize airspace within Saddle A and B MOA.

**MTRs.** Training would utilize portions of six MTRs near Mountain Home including IR-303, VR-316, VR-319, VR-1300, VR-1301 and VR-1302. MTRs would be used for specific training objects and not for regular transit between the base and airspace.

**Restricted Areas.** The Restricted Area R-3202 is currently used by Mountain Home AFB airmen which is associated with Saylor Creek Range (see **Figure 2.4-1**).

**Table 3.2-5. Mountain Home AFB Baseline Busy Month  $L_{dnmr}$**

Airspace	$L_{dnmr}$ (dBA) <sup>1</sup>
Jarbridge North MOA	64
Jarbridge South MOA	< 45
Owyhee North MOA	64
Owyhee South MOA	< 45
Paradise North MOA	< 45
Paradise South MOA	< 45
Saddle A MOA	< 45
Saddle B MOA	< 45
Saylor Creek Range (R-3202) <sup>2</sup>	64
Juniper Butte Range (R-3204) <sup>3</sup>	64

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> The noise levels shown for Saylor Creek Range are for R-3202 Low and High combined.

<sup>3</sup> The noise levels shown for Juniper Butte Range are for R-3204A, B, and C combined.

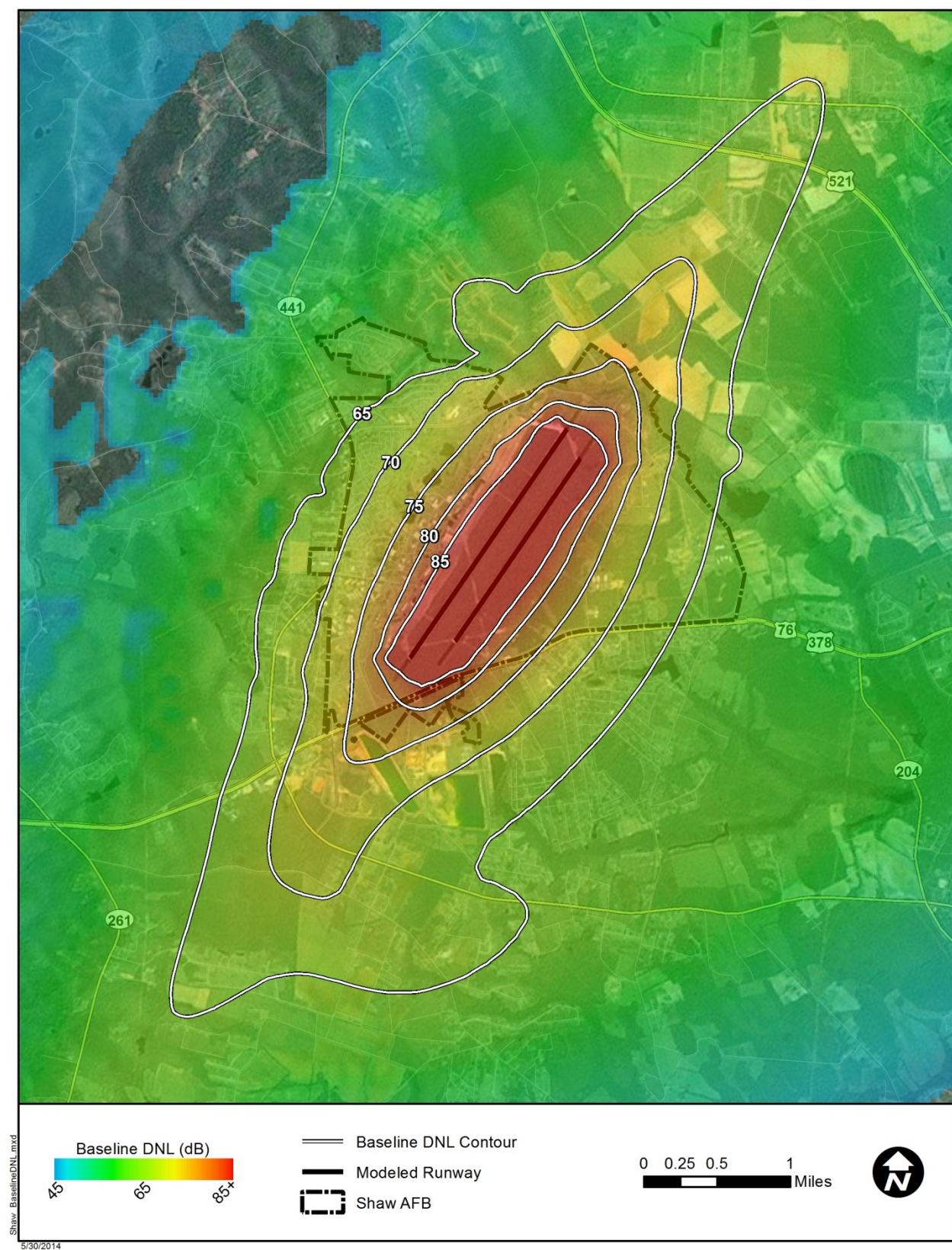
### 3.2.3 Alternative C: Shaw AFB

#### 3.2.3.1 Shaw Airfield Noise

The baseline DNL noise contour map is shown in **Figure 3.2-4**. Acreage and population counts for areas under the baseline DNL are listed in **Table 3.2-6**.



**Figure 3.2-4. Shaw AFB Baseline DNL Noise Contour Map**



**Table 3.2-6. Shaw AFB Baseline Acreage and Population Counts**

DNL	Population <sup>1,2,3</sup>	Acreage <sup>3</sup>		
		On-Base	Off-Base	Total
65-70	38	500	3,814	4,313
70-75	3	753	1,198	1,951
75-80	0	686	145	831
80-85	0	399	13	412
85+	0	702	0	702
<b>Total</b>	<b>41</b>	<b>3,039</b>	<b>5,170</b>	<b>8,209</b>

<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

<sup>3</sup> Values rounded to nearest whole number and may not sum to total

### 3.2.3.2 Shaw Airspace Noise

The ROI, as indicated below, for the Proposed Action includes two MOAs, five MTRs and two Restricted Areas used by Shaw AFB airmen and the land areas underneath this airspace. Not all available airspace, as shown on **Figure 2.5-1**, would be utilized for training. The baseline conditions are summarized in **Table 3.2-7**.

**MOAs.** Training for A-29 pilots would utilize airspace within Gamecock A MOA and Robroy LOA.

**MTRs.** Training would utilize portions of five MTRs near Shaw including IR-035, VR-087, VR-088, VR-097 and VR-1059. MTRs would be used for specific training objects and not for regular transit between the base and airspace.

**Restricted Areas.** Two Restricted Areas are currently used by Shaw AFB airmen: R-6002, associated with Poinsett Range; and R-3007, associated with Townsend Range (see **Figure 2.5-1**).

**Table 3.2-7. Shaw AFB Baseline Busy Month  $L_{dnmr}$** 

Airspace	$L_{dnmr}$ (dBA) <sup>1</sup>
Gamecock A MOA	57
Gamecock B MOA	57
Gamecock C MOA	57
Gamecock D MOA	57
Gamecock I MOA	57
Poinsett MOA	68
Robroy LOA	57
Poinsett Range (R-6002) <sup>2</sup>	68
Townsend Range (R-3007) <sup>3</sup>	54

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> The noise levels shown for Poinsett Range are for R-6002A, B, and C combined.

<sup>3</sup> The noise levels shown for Townsend Range are for R-3007A, B, C, and D combined.

### 3.3 AIR QUALITY

National Ambient Air Quality Standards: The Clean Air Act requires the USEPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. There are primary and secondary standards under the NAAQS. Primary standards set limits to protect public health, including “sensitive” populations such as children and the elderly. Secondary standards set limits to protect public welfare, including protection from decreased visibility, damage to animals, crops, vegetation, and buildings. Areas that are in violation of the NAAQS are designated nonattainment or in maintenance for attainment of criteria pollutants.

There are six criteria pollutants found under the NAAQS: ozone ( $O_3$ ), carbon monoxide (CO), nitrogen dioxide ( $NO_2$ ), sulfur dioxide ( $SO_2$ ), particulate matter (PM) [which includes particulate matter with an aerodynamic diameter less than or equal to 10 micrometers ( $PM_{10}$ ) and less than or equal to 2.5 micrometers ( $PM_{2.5}$ )], and Lead (Pb); ozone precursors include volatile organic compounds (VOCs) and nitrogen oxides ( $NO_x$ ). This EA evaluates five of the six criteria pollutants (**Table 3.3-1**). Lead, as well as hazardous and toxic air pollutants, is not included in this analysis because they are primarily generated by stationary industrial activities, not by mobile sources such as aircraft.

Established under the *Clean Air Act* (Section 176(c)(4)), the General Conformity Rule requires federal agencies to ensure that their actions conform to applicable implementation plans for the achievement and maintenance of the NAAQS for criteria pollutants. To achieve conformity, a federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (for example, a state or a smaller air quality region). Federal agencies prepare written Conformity Determinations for federal actions that are in or affect NAAQS nonattainment areas or maintenance areas when the total direct or indirect emissions of nonattainment pollutants (or their precursors in the case of ozone) exceed specified thresholds.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter [ $\mu g/m^3$ ] or milligrams per cubic meter [ $mg/m^3$ ]) or as a volume fraction (e.g., parts per million [ppm] or parts per billion [ppb] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO,  $SO_2$ , and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as  $O_3$ ,  $NO_2$ , and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Particulate Matter is generated as primary pollutants by various mechanical processes (e.g., abrasion,



erosion, mixing, or atomization) or combustion processes. However, PM<sub>10</sub> and PM<sub>2.5</sub> can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered “precursors” to secondary pollutants in the atmosphere (such as reactive organic gases, VOCs, and NO<sub>x</sub>), are the pollutants for which emissions are evaluated to control the level of O<sub>3</sub> in the ambient air. Sources of emissions evaluated in this EA include those generated during proposed infrastructure upgrades and from aircraft operations/maintenance activities.

**Table 3.3-1. National Ambient Air Quality Standards**

Pollutant		Averaging Time	National Standards <sup>1,2</sup>	
			Primary <sup>3</sup>	Secondary <sup>4</sup>
O <sub>3</sub>		8-hour	0.075 ppm (147 µg/m <sup>3</sup> )	Same as primary
CO		8-hour	9 ppm (10 mg/m <sup>3</sup> )	—
		1-hour	35 ppm (40 mg/m <sup>3</sup> )	—
NO <sub>2</sub>		Annual	53 ppb (100 µg/m <sup>3</sup> )	Same as primary
		1-hour	100 ppb (188 µg/m <sup>3</sup> )	—
SO <sub>2</sub>		1-hour	75 ppb (105 µg/m <sup>3</sup> )	—
		3-hour	—	0.5 ppm (1,300 µg/m <sup>3</sup> )
PM	PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	Same as primary
	PM <sub>2.5</sub>	Annual	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
		24-hour	35 µg/m <sup>3</sup>	Same as primary

Source: USEPA 2012a.

<sup>1</sup> Standards other than the 24-hour PM<sub>10</sub>, 24-hour PM<sub>2.5</sub>, and those based on annual averages are not to be exceeded more than once a year.

<sup>2</sup> Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis. Parts per million (ppm), parts per billion (ppb), micrograms per cubic meter of air (µg/m<sup>3</sup>), or milligrams per cubic meter of air (mg/m<sup>3</sup>).

<sup>3</sup> Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state’s implementation plan is approved by the USEPA.

<sup>4</sup> Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

The quality of air between ground level and 3,000 ft above ground level (AGL) is of most concern to human health. Below 3,000 ft AGL there is less mixing of the atmosphere, so airflow stagnates and emissions are not as easily dispersed into the upper atmosphere. Pollutants emitted above this mixing height become diluted in the large volume of air before they are slowly transported to ground level. These emissions have little or no effect on ambient air quality and are excluded from analysis. Per USEPA guidance (USEPA 1992), unless otherwise stipulated within a state’s implementation plan, a mixing height of 3,000 feet (ft) AGL was assumed.

The methodology for estimating aircraft emissions involves evaluating the type of activity, the number of hours of operation, the type of engine, and the mode of operation for each type of aircraft. Emissions occurring above the mixing height were considered to be above the atmospheric inversion layer and would not impact the local air quality. Mobile source emissions include aircraft operations (take-offs and

landings), ground support equipment, and maintenance aircraft operations performed with the engines still mounted on the aircraft (engine run-ups and trim checks). Emissions from aircraft take-offs and landings, as well as other flight operations at the base, considered all based and transient aircraft. Aircraft emissions were calculated based on flight profiles and operations totals for each installation.

Greenhouse Gases: Greenhouse Gases (GHGs) trap heat in the atmosphere, similar to the glass walls of a greenhouse. GHG emissions occur from natural processes as well as human activities and accumulation of GHGs in the atmosphere helps regulate the earth's temperature. Scientific evidence suggests a trend of increasing global temperature over the past century may be related to an increase in GHG emissions from human activities. The climate change connected to global warming and its associated ecological changes may produce negative economic and social consequences across the globe. "Climate change" refers to any significant change in measures of climate (such as temperature, precipitation, or wind) that lasts for an extended period (decades or longer). The Intergovernmental Panel on Climate Change (IPCC), in its Fourth Assessment Report, stated that warming of the Earth's climate system is unequivocal, and that most of the observed increase in globally averaged temperatures since the mid-20th Century is very likely due to the observed increase in concentrations of greenhouse gases from human activities (IPCC 2007).

The effects of climate change on the Proposed Action are discussed in **Section 3.10**.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP of a gas or aerosol is a function of its atmospheric lifetime and its ability to trap heat in the atmosphere. The GWP rating system is standardized to CO<sub>2</sub>, which has a value of one. For example, CH<sub>4</sub> has a GWP of 25, which means that it has a global warming effect 25 times greater than CO<sub>2</sub> on an equal-mass basis. Total GHG emissions from a source are often reported as a CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The CO<sub>2</sub>e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

On a national scale, federal agencies are addressing GHG emissions by reductions mandated in federal laws and EOs. This includes EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, signed in October 2009. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EO 13514 and the Energy Policy Act of 2005, the Air Force has implemented a number of renewable energy projects. The types of projects currently in operation include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The Air Force continues to promote and install new renewable energy projects.

The potential effects of proposed GHG emissions are by nature global and cumulative. Individual sources of GHG emissions are not significant enough to have an appreciable or measurable effect on climate change. At this time, a threshold of significance has not been established for the emissions of GHGs, but the CEQ has released the *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, which suggests that proposed actions that would reasonably emit 25,000 metric tons or more of carbon dioxide equivalent gases should be evaluated by quantitative and qualitative assessments. This is not a threshold of significance but rather a minimum level that would require consideration in NEPA documentation. Nonetheless, the GHG emissions from the Proposed

Action/Preferred Alternative were quantified to the extent feasible for information and comparison purposes.

### 3.3.1 Alternative A (Preferred Alternatives): Moody AFB

The affected environment for Moody AFB-generated emissions includes the base, the area surrounding the base where aircraft operate below 3,000 ft AGL (including the airfield itself), the airspace overlying these areas, and the areas where aircraft train. The base is located within Lanier and Lowndes Counties, Georgia, and falls within the Columbus (Georgia)-Phoenix City (Alabama) Interstate Air Quality Control Region (AQCR) 2 (40 CFR Part 81.58). Air quality in Lanier and Lowndes Counties has been designated as either in “attainment” or “unclassifiable/attainment” with the NAAQS for all criteria pollutants (40 CFR 81.332). Lanier and Lowndes Counties are not located in nonattainment or maintenance areas; therefore, the general conformity requirements do not apply to the proposed project and a general conformity determination is not required. **Table 3.3-2** summarizes the regional emissions (stationary and mobile) of criteria pollutants and precursor emissions in Lanier and Lowndes Counties.

**Table 3.3-2. Regional Baseline Emissions for Lanier and Lowndes Counties**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
Lanier County <sup>2</sup>	13,557	5,931	481	22	2,266	651	-
Lowndes County <sup>2</sup>	25,765	33,591	6,476	784	8,746	2,367	-

<sup>1</sup> CO<sub>2</sub>e = (CO<sub>2</sub> \* 1) + (CH<sub>4</sub> \* 21) + (N<sub>2</sub>O \* 310), (40 CFR Part 98, Subpart A, Table A-1) in metric tons per year.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

### 3.3.2 Alternative B: Mountain Home AFB

The affected environment for Mountain Home AFB-generated emissions includes the base, the area surrounding the base where aircraft operate below 3,000 ft AGL (including the airfield itself), the airspace overlying these areas, and the areas where aircraft train. The base is located within Elmore County, Idaho, and falls within the Idaho Interstate Air Quality Control Region (AQCR) 63 (40 CFR Part 81.313). Air quality in Elmore County has been designated as either in “attainment” or “unclassifiable/attainment” with the NAAQS for all criteria pollutants (40 CFR 81.332). Elmore County is not located in nonattainment or maintenance areas; therefore, the general conformity requirements do not apply to the proposed project and a general conformity determination is not required. **Table 3.3-3** summarizes the regional emissions (stationary and mobile) of criteria pollutants and precursor emissions in Elmore County.

**Table 3.3-3. Regional Baseline Emissions for Elmore County**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
Elmore County <sup>2</sup>	33,019	20,277	4,355	85	7,734	1,691	-

<sup>1</sup> CO<sub>2</sub>e = (CO<sub>2</sub> \* 1) + (CH<sub>4</sub> \* 21) + (N<sub>2</sub>O \* 310), (40 CFR Part 98, Subpart A, Table A-1) in metric tons per year.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

### 3.3.3 Alternative C: Shaw AFB

The affected environment for Shaw AFB-generated emissions includes the base, the area surrounding the base where aircraft operate below 3,000 ft AGL (including the airfield itself), the airspace overlying these areas, and the areas where aircraft train. The base is located within Sumter County, South Carolina, and falls within the Camden-Sumter Interstate Air Quality Control Region (AQCR) 198 (40 CFR Part 81.110). Air quality in Sumter County has been designated as either in “attainment” or “unclassifiable/attainment” with the NAAQS for all criteria pollutants (40 CFR 81.332). Sumter County is not located in nonattainment or maintenance areas; therefore, the general conformity requirements do not apply to the proposed project and a general conformity determination is not required. **Table 3.3-4** summarizes the regional emissions (stationary and mobile) of criteria pollutants and precursor emissions in Sumter County.

**Table 3.3-4. Regional Baseline Emissions for Sumter County**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
Sumter County <sup>2</sup>	23,324	19,233	3,456	184	5,745	1,449	-

<sup>1</sup> CO<sub>2</sub>e = (CO<sub>2</sub> \* 1) + (CH<sub>4</sub> \* 21) + (N<sub>2</sub>O \* 310), (40 CFR Part 98, Subpart A, Table A-1) in metric tons per year.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

## 3.4 SAFETY AND OCCUPATIONAL HEALTH

**Mishaps:** The primary safety concern at facilities with aircraft operations is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, pilot error, equipment malfunction, or bird-aircraft strikes. The USAF has defined aircraft mishap classifications based upon personal injury and property damage. These mishap classifications range from Class A (i.e., total cost in excess of \$2 million or more, fatality, or permanent disability, destruction of DoD aircraft) to Class D (i.e., total cost to \$20,000 or more but less than \$50,000).

The A-29 Super Tucano is an aircraft new to the USAF inventory, and no detailed statistics on its safety in USAF service exist. The Embraer EMB 314 aircraft upon which the A-29 is based provides the nearest analogue for characterizing expected safety performance. However, safety statistics generated by international operators may not be directly applicable. The safety performance of EMB 314s used by other operators may be affected by environmental factors, maintenance regimes, deployment in combat rather than training, and other factors that may not apply to, or may be very different from, factors affecting safety performance in LAS training as part of the Proposed Action. However, the EMB 314 is generally considered to be a safe, rugged, and durable aircraft (Lozada-Ruiz 2014).

**Bird/wildlife Aircraft Strike Hazards (BASH):** BASH is defined as the threat of aircraft collision with birds and other wildlife during aircraft operations. Aircraft may encounter birds at altitudes up to 30,000 ft AGL. However, most birds fly close to the ground; over 95 percent of strikes occur below 3,000 ft AGL and over 43 percent occur below 200 ft AGL (AFSC 2014a). Of these strikes, over 40 percent of all bird strikes occur at take-off and departure or approach and landing; a further 37 percent occur during low altitude flight (AFSC 2014b). Since 1973, 33 Class A mishaps, resulting in the destruction of 15 aircraft, have been caused by BASH hazards (AFSC 2014c). In addition, aircraft face collision dangers from other wildlife, such as deer, during takeoff or landing.

The focus of the USAF BASH program is to reduce the potential for wildlife hazards to aircraft operations. The BASH program combines various active and passive measures to deny use of airfield areas to birds and other wildlife, including discouraging wildlife from entering airfield areas, removing them when they do enter, and reducing the quality and attractiveness of potential habitat in the vicinity. All installations considered as alternative venues for execution of the Proposed Action maintain ongoing, effective BASH programs that actively monitor and assess, and proactively anticipate, wildlife hazards, and coordinate with operations planners and aviators to respond to those hazards adaptively.

**Fire Management:** Of special concern on training ranges is the risk of wildland fire caused by training activities. While training munitions do not employ the explosive warheads that combat munitions do, rocket motors and fuel and pyrotechnic spotting charges have the potential to generate sparks and flame that can spread to vegetation. Requirements for fire management for range operations are defined by Air Force Instruction (AFI) 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program*, as well as AFI 13-212, *Range Planning and Operations*.

**Personnel Safety and Occupational Health:** Day-to-day operations and maintenance activities conducted on USAF installations, training ranges, and other facilities are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements. Adherence to industrial-type safety procedures and directives (e.g., Air Force Policy Directive 90-8) ensures safe working conditions.

Mishap prevention program requirements, assignment of responsibilities, and program management information are established within Air Force Instruction (AFI) 91-202, *The US Air Force Mishap Prevention Program*, dated 5 August 2011 and incorporating change 1 on 20 March 2012, Air Force Policy Directive 91-2, *Safety Programs*. All Air Force Occupational Safety and Health 91-series standards are consolidated in AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, dated 15 June 2012. The Air Force Occupational Safety and Health Program applies to all USAF activities and its purpose is to minimize loss of USAF resources and protect USAF personnel from death, injuries, or illnesses by managing risks.

USAF programs and regulations governing personnel safety and occupational health apply to operations, maintenance, and training at all USAF installations, including all installations considered herein as alternatives for the implementation of the Proposed Action. No changes to standard operating procedures, regulations, or programs safeguarding personnel safety and occupational health are included in the Proposed Action. Therefore, personnel safety and occupational health will not be analyzed in greater depth in this document.

**Explosive and Ordnance Safety:** Air Force Manual 91-201, *Explosives Safety Standards*, requires that defined quantity-distance (QD) arcs be maintained between explosive materials storage (e.g., munitions) and handling facilities and a variety of other types of facilities. QD arcs are determined by the type and quantity of explosive materials stored; within QD arcs, development is either restricted or altogether prohibited in order to maintain personnel safety and minimize the potential for damage in the event of an accident. The LAS training program will not employ live munitions, and so explosive and ordnance safety will not be discussed further.

### **3.4.1 Alternative A (Preferred Alternative): Moody AFB**

#### **3.4.1.1 Mishaps**

Moody AFB has established detailed mishap response procedures in Moody AFB Instruction 11-250, *Aircrew Operational Procedures/Air Traffic Control/Airfield Management*. Since 2007, there has been one Class A mishap at Moody AFB, involving an A-10 aircraft (Moody AFB 2012a).

#### **3.4.1.2 BASH**

The *Expanded BASH Program for Moody AFB and Private and Public Lands Surrounding Moody AFB, Georgia* was implemented in 2003 and applies to private and public lands within a 5-mile radius of Moody AFB (Moody AFB 2003). This radius covers Grand Bay Range and portions of the land underlying Moody 1 MOA. An average of 26 bird/wildlife strikes occurs annually at Moody AFB. Most strikes cause no significant damage. From 2000 to 2010 an average of five bird strikes per year resulted in damage to Moody AFB aircraft, none severe enough to cause a Class A mishap (Moody AFB 2012a).

#### **3.4.1.3 Fire Management**

Wildland fires are uncommon occurrences at Moody AFB, with an annual average of less than two wildland fires on the installation. The installation currently meets all fire hazard management requirements in AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range Planning and Operations*, and maintains a Wildland Fire Management Plan for the Grand Bay Range. Fire suppression at Townsend Range is the responsibility of Marine Corps Air Station Beaufort, which maintains its own fire crews. Wildfire peak danger periods occur between mid-winter and early summer and then again in mid-fall. Wildfire intensity on the installation has been lessened through the reduction of fuel loads through prescribed burning, the thinning and management of commercial forest stands, and the creation and annual maintenance of permanent firebreaks throughout the installation. The initial suppression of wildfires is accomplished by the 23d Civil Engineer Squadron Fire Department (23 CES/CEF) with assistance from the Environmental Element (23 CES/CEAN). If necessary, the Georgia Forestry Commission is contacted for assistance.

### **3.4.2 Alternative B: Mountain Home AFB**

#### **3.4.2.1 Mishaps**

Mountain Home AFB maintains detailed mishap response procedures, captured in Mountain Home AFB Instruction 11-250, *Airfield Operations and Base Flying Procedures*. Only one Mountain Home AFB-based aircraft has been involved in a Class A mishap in the past decade (USAF 2013a), resulting in a mishap rate lower than the Air Force-wide average. One additional Class A mishap involving an F-16 from the USAF Thunderbirds demonstration team occurred at Mountain Home AFB in 2003; the aircraft involved was performing aerobatics for an air show rather than conducting normal flying operations, and the mishap was attributed to pilot error (AFAIB 2004).

Mishaps occur much less frequently in the training airspace than in the airfield vicinity, as fewer hazards exist and the potential for error or accident is lower. Previous analysis of safety in the MOAs and restricted areas indicate low potential mishap rates (USAF 1998).

### **3.4.2.2 BASH**

Mountain Home AFB aircraft historically have experienced a very low rate of bird strikes in the airfield environs; the installation is not located in an area that attracts birds of consequential size, and it maintains an active BASH program. Between 2003 and 2013, 20 wildlife strike incidents occurred in the airfield environment; of these, none were Class A mishaps (USAF 2013a).

### **3.4.2.3 Fire Management**

Wildland fires are of special concern in semiarid Central Idaho, particularly in the summer fire season, where strong winds, dry fuels, and little precipitation generate ideal wildfire conditions. Initial suppression of wildland fire on the MHRC is the primary responsibility of the 366th Civil Engineer Squadron Fire Department. Currently, the installation meets all fire hazard management requirements in AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range Planning and Operations*, and maintains a Wildland Fire Management Plan for the MHRC. Fire suppression equipment and personnel are stationed on the MHRC during declared fire season to quickly suppress any fires that may start on the ranges' exclusive use areas. In addition, the Bureau of Land Management (BLM) has a cooperative agreement with Mountain Home AFB for protection of withdrawn lands. The Support Agreement between 366th Fighter Wing, Mountain Home AFB, and the BLM Lower Snake River District (July 2003) states that BLM will provide fire support for all land outside the exclusive use areas. If fires occur outside of the fire season in the public use area, the USAF will conduct an initial attack on the fire and request and recruit BLM personnel for assistance. Fire suppression activity is included under the Interagency Support Agreement between Mountain Home AFB and BLM. Fire crews would respond from Mountain Home AFB and the BLM Jarbidge Resource Office in Twin Falls. Response times would vary from 1 to 4 hours depending on staffing and weather.

Special restrictions govern the use of 2.75'' rockets in the MHRC. The use of all rocket-propelled munitions types except for the MK61 and WTU-1/B models is restricted during the summer fire season and at any time range manager(s) determines that fire danger is high.

## **3.4.3 Alternative C: Shaw AFB**

### **3.4.3.1 Mishaps**

Aircraft flight operations from Shaw AFB are governed by standard flight rules. Specific safety requirements to ensure flight safety are contained in Shaw AFB Instruction 11-250, *Airfield Operations and Base Flying Procedures*. In the last 10 years, there have been two reported Class A aircraft accidents at Shaw AFB (USAF 2013a).

### **3.4.3.2 BASH**

Shaw AFB manages the hazard from bird and wildlife interactions with airfield operations with an active and ongoing BASH program. Shaw AFB has an effective, ongoing BASH program through which information and assistance is freely shared between airfield users and the local air traffic controllers. Wildlife strikes at Shaw AFB are infrequent but not out of the ordinary. Twenty BASH-related incidents occurred in the airfield environment between 2007 and 2010. No Class A mishaps related to wildlife hazards have been reported (USAF 2013a).



### 3.4.3.3 Fire Management

Wildland fires are not common at Poinsett Range. Shaw AFB currently meets all fire hazard management requirements in AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range Planning and Operations*, and maintains a Wildland Fire Management Plan for the Poinsett Range. Initial suppression of wildland fire is the responsibility of the 20th Civil Engineer Squadron Fire Department, which has mutual-aid agreements with the Sumter Fire Department, providing additional response capability if required. All of these capabilities would continue in effect. The 20th Civil Engineer Squadron Environmental Flight periodically performs prescribed fires at the Poinsett Range between December and March to reduce wildland fire hazards.

## 3.5 HAZARDOUS MATERIALS / WASTE

Hazardous materials are chemical substances that pose a substantial hazard to human health or the environment. Hazardous materials include hazardous substances, hazardous chemicals, and toxic chemicals. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics. Hazardous materials are defined in AFI 32-7086, *Hazardous Materials Management*, to include any substance with special characteristics that could harm people, plants, or animals.

Resource Conservation and Recovery Act (RCRA) (42 US 6901, *et seq.*) defines a hazardous waste as a solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Waste may be classified as hazardous due to its toxicity, reactivity, ignitability, or corrosivity. Hazardous wastes may take the form of solid, liquid, contained gaseous, semi-solid wastes (e.g., sludges), or any combination of wastes that pose a substantial present or potential hazard to human health or the environment and have been discarded or abandoned.

With regard to environmental impacts, hazardous substances are regulated under several federal programs administered by the USEPA, including the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (USC, Section 9601 *et. seq.*), Emergency Planning and Community Right-to-Know Act (42 USC 11001 *et seq.*), Toxic Substances Control Act (TSCA) (15 USC 2601, *et seq.*), and RCRA. DoD installations are required to comply with these laws along with other applicable federal, state, and DoD regulations.

**Environmental Restoration Program:** The DoD developed the Defense Environmental Restoration Program (DERP) to identify, investigate, and remediate potentially hazardous material disposal sites on DoD property prior to 1984. As part of the DERP, the Environmental Restoration Program (ERP) facilitates the thorough identification, investigation and cleanup of contaminated sites located at military installations to allow for beneficial reuse of the property. ERP sites include landfills, underground waste fuel storage areas, solid waste management units (SWMU) and maintenance generated wastes. The Military Munitions Response Program (MMRP) is designed to clean up discarded military munitions, unexploded ordnance, and their chemical residues at closed historic ranges and munitions disposal sites.

**Toxic Substances:** The promulgation of TSCA represented an effort by the federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA Chemical Substances Inventory lists information on more than 62,000 chemicals and substances. Toxic chemical substances regulated by the USEPA under TSCA include asbestos-containing materials (ACM), lead-based paint (LBP), and poly-chlorinated biphenyls (PCBs).

ACMs are those materials containing greater than 1 percent asbestos. Friable, finely divided, and powdered wastes containing greater than 1 percent asbestos are subject to regulation. A friable waste is one that can be reduced to a powder or dust under hand pressure when dry. Non-friable ACMs, such as floor tiles, are considered nonhazardous, except during removal and/or renovation, so they are not subject to regulation. Asbestos management plans provide guidance for the identification of ACMs and the management of asbestos wastes. LBP, which was banned in 1978, is defined as surface paint that contains lead in excess of 1 milligram per square centimeter as measured by X-ray fluorescence spectrum analyzer or 0.5 percent lead by weight. PCBs are a persistent carcinogen found in electrical transformers, oil, and hydraulic fluids prior to their ban in 1979.

The ROI for hazardous materials and wastes, toxic substances, and the ERP/MMRP includes Moody AFB, Mountain Home AFB, and Shaw AFB, but not the associated airspaces for each installation. Although aircraft would continue to operate in MOAs and ranges around each installation, aircraft operations would not generate or dispose of hazardous wastes in these airspaces. Therefore, an analysis of hazardous materials and wastes in each airspace is not provided.

### **3.5.1 Alternative A (Preferred Alternative): Moody AFB**

#### **3.5.1.1 Hazardous Materials**

Hazardous materials such as flammable and combustible liquids, acids, corrosives, caustics, anti-icing chemicals, compressed gases, solvents, paints, paint thinners, and pesticides are used throughout Moody AFB. Moody AFB has implemented a Hazardous Materials Pharmacy (HAZMART) to manage the purchasing and distribution of hazardous materials. The HAZMART is responsible for purchasing hazardous materials, maintaining an inventory database, and maintaining Material Safety Data Sheets (MSDS) for hazardous materials (USAF 2013b).

The Moody AFB Spill Prevention and Response Plan specifies protocols for responding to releases, accidents, and spills involving petroleum, oil, and lubricants (POL) or hazardous substances. Protocols described in the Spill Prevention and Response Plan includes spill detection, spill reporting, spill containment, and proper cleanup and disposal methods (USAF 2000).

#### **3.5.1.2 Hazardous Waste**

Moody AFB is permitted as a large-quantity generator of hazardous waste and generates approximately 76,500 pounds of hazardous waste per year. The largest amount of hazardous waste at Moody AFB is generated as a result of aircraft support functions, including the maintenance and operation of military aircraft. Hazardous wastes are collected in 55-gallon metal drums or other suitable containers. Currently, Moody AFB has one 90-day hazardous waste storage facility, which is operated and managed by a private contractor, and 66 satellite accumulation points (Haugen 2014).

Moody AFB has implemented a Hazardous Waste Management Plan that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of hazardous waste. The plan also addresses record keeping, spill contingency and response requirements, and education and training requirements. Procedures and responsibilities for responding to a hazardous waste spill or other incidences are described further in the Moody AFB Integrated Contingency Plan (USAF 2013b).

### **3.5.1.3 Environmental Restoration Program/Military Munitions Response Program**

Moody AFB has 31 closed ERP sites and one closed MMRP site, none of which required remediation. An additional 11 ERP sites have on-going corrective action and have land use controls associated with them. There is one MMRP site, the former skeet range, which has an ongoing investigation (Burnam 2014).

### **3.5.1.4 Toxic Substances**

Moody AFB has an Asbestos Management Plan that provides guidance for the identification of ACM and the management of ACM wastes. It also has a facility register that maintains ACM records for its facilities. In coordination with the Asbestos Program Officer, qualified ACM contractors would determine the presence of ACM in facilities that may need to be renovated as part of the Proposed Action.

PCBs are not stored on-base. Small PCB capacitors and ballasts are processed through the 90-day hazardous waste storage facility, while large items such as transformers are drained of the contaminate and processed through the Defense Logistics Agency Disposition Services (Haugen 2014).

Several buildings at Moody AFB that could be used for the LAS Training Beddown have the potential to contain ACM or LBP based on their date of construction, including the following buildings in **Table 3.5-1**.

**Table 3.5-1. Moody AFB – Building Construction Dates**

<b>Building Number</b>	<b>Date of Construction</b>
701	1941
706	1969
718	1941
754	1954
757	1962

Source: USAF 2014a

## **3.5.2 Alternative B: Mountain Home AFB**

### **3.5.2.1 Hazardous Materials**

Similar hazardous materials are used at Mountain Home AFB, including hydraulic fluid, engine oil, JP-8 and other fuels, antifreeze and deicing fluids, solvents, corrosive liquids, paints and adhesives, and contaminated solids. Mountain Home AFB also operates a HAZMART program. The HAZMART is responsible for purchasing hazardous materials, maintaining an inventory database, and maintaining MSDS for hazardous materials (USAF 2012b).

The HAZMAT Emergency Planning and Response Plan addresses on-base storage locations and proper handling procedures of all hazardous materials to minimize potential spills and releases at the point of use. The plan discusses activities to be undertaken to minimize the adverse effects in the incidence of a spill, including notification, containment, decontamination, and cleanup of spilled materials (USAF 2013a).

### **3.5.2.2 Hazardous Waste**

Mountain Home AFB is regulated as a large quantity hazardous waste generator under RCRA, and has produced an average of 19,000 pounds of hazardous waste annually over the past 3 years (2011-2013). The largest amount of hazardous waste at Mountain Home AFB is also generated as a result of aircraft support functions, including the maintenance and operation of military aircraft. The Mountain Home AFB Hazardous Waste Management Plan governs the Mountain Home AFB Hazardous Waste Management Program. There is one 90-day storage area and 64 satellite accumulation points in various locations on base (Ohlsen 2014).

### **3.5.2.3 Environmental Restoration Program/Military Munitions Response Program**

A total of 33 ERP sites have been identified since the ERP began at Mountain Home AFB. Unlimited Use/Unrestricted Exposure has been achieved for 25 closed ERP sites. Land use controls are in place at four landfills to restrict access and ensure no digging or dumping within these areas occurs. Remaining and ongoing cleanup activities are occurring at four sites: Long Term Monitoring (LTM) and soil sampling at Former Fire Training Area, FT-08; Remedial Action Operation at ERP Site ST-11; Bedrock vapor extraction at ERP Site SD-24; and LTM and Bedrock vapor extraction at ERP Site OU-3 (Roller 2014).

Under the Compliance Restoration Program, two former oil/water separator sites are being further investigated for potential removal of contaminated soils (Roller 2014).

Under the MMRP Program, two on-base former skeet ranges and a closed on-base Explosive Ordnance Disposal Proficiency Range are contracted for contaminated soil disposal and buried ordnance debris removal in mid-summer 2014 (Roller 2014). Soils are contaminated with polynuclear aromatic hydrocarbons from clay pigeon debris (USAF 2012b).

### **3.5.2.4 Toxic Substances**

In coordination with the Asbestos Program Officer, qualified civil engineering personnel at Mountain Home AFB would determine the presence of ACM in facilities that may need to be renovated as part of the Proposed Action. The Bioenvironmental Engineer Office is responsible for determining the presence of LBP prior to any construction activities. Materials, especially discarded oil products, may be screened for PCB contamination prior to disposal (USAF 2012b). PCBs are not stored separately on base, but are processed through the 90-day storage facility (Ohlsen 2014).

Multiple structures at Mountain Home AFB that could be used for the LAS Training Beddown have the potential to contain ACM or LBP based on their date of construction, including the following buildings in **Table 3.5-2**.

**Table 3.5-2. Mountain Home AFB – Building Construction Dates**

Building Number	Date of Construction
211	1943
1331	1955
1361	1965
1363	1971
2425	1970

Source: USAF 2014b

### **3.5.3 Alternative C: Shaw AFB**

#### **3.5.3.1 Hazardous Materials**

Similar to Moody AFB and Mountain Home AFB, hazardous materials used at Shaw AFB are primarily for aircraft training and maintenance operations. Types of hazardous substances include oil, Jet-A fuel, diesel, gasoline, hydraulic fluid, hydrazine, paints, solvents, detergents, adhesives/sealants, lube oil, batteries, antifreeze, and de-icing chemicals (USAF 2013a). In addition, a hydrazine facility is operated in Building 1619 for the servicing of aircraft hydrazine systems (Johnson 2014). Hazardous materials used by USAF and contractor personnel at Shaw AFB are controlled through the Hazardous Materials Management Process, including a HAZMART and Environmental, Safety, and Occupational Health (ESOH-MIS) tracking system. This process centralizes procurement, handling, storage, and issuing of hazardous materials and their turn-in, recovery, reuse, or recycling (USAF 2013a).

The Shaw AFB Integrated Contingency Plan for Oil and Hazardous Substance Spill Prevention and Response governs the Hazardous Materials Management Process and addresses on-site storage locations and proper handling procedures of all hazardous materials to minimize potential spills and releases at the point of use. The Plan further outlines activities to be undertaken to minimize the adverse effects in the incidence of a spill, including notification, containment, decontamination, and cleanup of spilled materials (USAF 2013a).

#### **3.5.3.2 Hazardous Waste**

Shaw AFB is also regulated as a large quantity hazardous waste generator under RCRA, and produces approximately 25,000-30,000 pounds of hazardous waste annually. Waste hydrazine and hydrazine contaminated rags are considered hazardous waste and are disposed of accordingly. Hydrazine that is spilled on the runway is neutralized with bleach, and washed to the Wastewater Treatment Plant (Johnson 2014).

The Shaw AFB Hazardous Materials and Waste Integrated Management Plan governs the Shaw AFB Hazardous Waste Management Program (USAF 2013a). There is one 90-day hazardous waste accumulation point, maintained by a private contractor, and 27 Satellite Accumulation Points currently at Shaw AFB (Johnson 2014). Shaw AFB recycles contaminated and used liquid petroleum products and absorbents, all lubricating fluids, scrap lead, lead-acid batteries, used oil and filters, shop rags, and diesel filters (USAF 2013a).

### **3.5.3.3 Environmental Restoration Program / Military Munitions Response Program**

Shaw AFB's most recent RCRA Part B Permit modification, dated November 25, 2013, lists 121 SWMUs/Areas of Concern, which have been grouped into 39 ERP sites for the purpose of addressing sites that are similar in contamination type and in close proximity to each other. These include 22 closed sites, one site that is undergoing remedial investigation, 12 sites that are undergoing remedial action, two sites that are under long term monitoring, and two sites that are response complete. A total of 15 ERP sites have land use controls. Shaw AFB has no MMRP sites (Salomon 2014).

### **3.5.3.4 Toxic Substances**

Shaw AFB's asbestos management plan provides guidance for the identification of ACM and the management of ACM wastes, disposed of at an off-base, permitted landfill. The LBP program is designed to establish management and organizational responsibilities and procedures for the identification and management of LBP hazards. An asbestos facility register, as well as the LBP program, is maintained by an Asbestos Operations Officer, who is appointed by the Base Civil Engineer (USAF 2013a).

Multiple structures at Shaw AFB that could be used for the LAS Training Beddown have the potential to contain ACM or LBP based on their date of construction, including the following buildings listed in **Table 3.5-3**.

**Table 3.5-3. Shaw AFB – Building Construction Dates**

<b>Building Number</b>	<b>Date of Construction</b>
114	1958
407	1953
611	1942
707	1971
1200	1954

Source: USAF 2014c

## **3.6 BIOLOGICAL/NATURAL RESOURCES**

Biological resources in this EA include native or naturalized fish, wildlife, and the habitats in which they occur. The ROI for biological resources is defined as the land area (habitats) and airspace that could potentially be affected by infrastructure improvement projects, as well as airspace operations.

Special-status plant and wildlife species are subject to regulations under the authority of federal and state agencies. Special-status species include species designated as threatened, endangered, or candidate species by state or federal agencies. The federal Endangered Species Act (ESA) of 1973 protects listed species against killing, harming, harassment, or any action that may damage their habitat. Under the ESA (16 USC §§ 1531 – 1544), an endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species likely to become an endangered species in the foreseeable future. Candidate species are those species for which the US Fish and Wildlife Service (USFWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher-priority listing activities. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government

agencies, industry, and the public that these species are at risk and could warrant protection under the ESA. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or federal rulings.

The Migratory Bird Treaty Act (MBTA), 16 USC §§ 703-712, protects those migratory birds listed in 50 CFR 10.13 from capture, pursuit, hunting, or removal from natural habitat. Over 800 bird species are currently protected under the MBTA. In 2001, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to ensure that federal agencies consider environmental effects on migratory bird species and, where feasible, implement policies and programs supporting the conservation and protection of migratory birds.

The USFWS removed the bald eagle from the list of species protected under the ESA in July 2007. However, the bald eagle continues to be protected under the federal Bald and Golden Eagle Protection Act (BGEPA) and the MBTA.

In addition to federally-listed species, the Idaho Fish and Game, Georgia Department of Natural Resources, Oregon Department of Fish and Wildlife, Nevada Natural Heritage Program, South Carolina Department of Natural Resources, and the North Carolina Wildlife Resource Commission designate other plants and animals as state threatened, endangered, candidate, and species of concern.

### **3.6.1 Alternative A (Preferred Alternative): Moody AFB**

#### **3.6.1.1 Wildlife**

Moody AFB is located within the lower coastal plains and flatwoods section of the Southern Coastal Plain ecoregion (USEPA 2013). Moody AFB supports a diversity of habitat which in turn supports a diversity of faunal species. However, these habitats can be grouped into two main habitat types: Carolina Bay Swamp Complex and the upland forests.

Faunal communities common to the longleaf pine (*Pinus palustris*) upland forests and longleaf pine/slash pine flatwoods include larger species such as white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cinereoargenteus*). The small mammal community is comprised of various small rodents, gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and the eastern cottontail rabbit (*Sylvilagus floridanus*) (Moody AFB 2013).

Forest habitat intermingled with the wetlands offers habitat for a variety of amphibian species including little grass frog (*Pseudacris ocularis*), squirrel tree frog (*Hyla squirella*), eastern spadefoot toad (*Scaphiopus holbrooki*). Common reptiles include the eastern box turtle (*Terrapene carolina*), five-lined skink (*Eumeces inexpectatus*), eastern glass lizard (*Ophisaurus ventralis*) eastern cottonmouth (*Agkistrodon piscivorus*), and gopher tortoise (*Gopherus polyphemus*) (Moody AFB 2013).

The preponderance of wetland areas within the Carolina Bay Swamp Complex offers habitat to other mammal species such as beavers (*Castor canadensis*) and round-tailed muskrats (*Neofiber alleni*) as well as those previously discussed for the forest habitat. Water-dependent amphibians and reptiles in the area include pig frogs (*Rana grylio*), alligators (*Alligator mississippiensis*), snapping turtles (*Chelydra serpentina*), striped newt (*Notophthalmus viridescens*), tiger salamander (*Ambystoma tigrinum*), eastern



cottonmouths, southern water snakes (*Nerodia rhombifer*), and southern bullfrogs (*Rana catesbeiana*) (Moody AFB 2013).

Common bird species are similar between the two main habitat types, with slight variations occurring with habitat-specific species. Common birds found within longleaf pine forests include the northern red-shouldered hawk (*Buteo lineatus*), bobwhite quail (*Colinus virginianus*), yellow-billed cuckoo (*Coccyzus americanus*), ruby-throated hummingbird (*Archilochus colubris*), downy woodpecker (*Picoides pubescens*), flicker (*Colaptes auratus*), American crow (*Corvus brachyrhynchos*), Carolina chickadee (*Parus carolinensis*), wild turkeys (*Meleagris gallopavo*), blue-gray gnatcatcher (*Poliophtila caerulea*), ruby-crowned kinglet (*Regulus calendula*), white-eyed (*Vireo griseus*) and red-eyed vireo (*Vireo olivaceus*), tufted titmouse (*Parus bicolor*), as well as other species of migratory song birds. The yellow-bellied sapsucker (*Sphyrapicus varius*), great-crested flycatcher (*Myiarchus crinitus*), blue jay (*Cyanocitta cristata*), gray catbird (*Dumetella carolinensis*), northern cardinal (*Cardinal cardinalis*), indigo bunting (*Passerina cyanea*), are additional avian species often associated with the swamp complexes.

The airspace proposed for the A-29 LAS training includes ecoregions of the Southern Coastal Plain and Southeast Plain (USEPA 2013). Common faunal species associated with the Coastal MOA airspace and the Grand Bay Range are similar to those discussed for Moody AFB. In addition, Grand Bay, one of the water management districts within the Grand Bay Bank Lake ecosystem which surrounds the installation, contains a large heron, egret, ibis rookery, as well as a year-round residents population of Florida sandhill cranes (*Grus canadensis pratensis*). Common gallinules (*Gallinula chloropus*), least bitterns (*Ixobrychus exilis*), and wood ducks (*Aix sponsa*) are known to nest in this bay, and wood storks (*Mycteria americana*), common snipe (*Gallinago gallinago*), killdeer (*Charadrius vociferus*), and other shorebirds utilize the area during migration along with migrating waterfowl such as ringed-neck duck (*Aythya collaris*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), and green-winged teal (*Anas crecca*) (Moody AFB 2013).

Species found within the Southeast Plain ecoregion in eastern Georgia are also very similar to the Coastal Plain ecoregion. White-tailed deer, black bear (*Ursus americanus*), bobcat, gray fox, raccoon, gray squirrel, and eastern chipmunk (*Tamias striatus*) comprise the common mammal species in the area. Herpetofauna includes the American alligator, eastern box turtle, copperhead (*Agkistrodon contortrix*), eastern diamondback rattlesnake (*Crotalus adamanteus*). Birds include eastern wild turkey, northern cardinal, Carolina wren, wood thrush (*Hylocichla mustelina*), tufted titmouse, hooded warbler (*Wilsonia citrina*), herons, and egrets (CEC 2011).

#### **3.6.1.2 Special Status Species**

The Proposed Action encompasses habitat for federal and state protected species located in several counties in Georgia and are presented in **Table 3.6-1**.

**Table 3.6-1. Federally Listed, Proposed, and Candidate Species Known to or That May Occur at Moody AFB ROI**

Common Name	Scientific Name	Federal Listing	State Listing	County
<b>Fish</b>				
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	E	Glynn, Liberty, Long, McIntosh, Tattnall, Wayne
<b>Invertebrates</b>				
Altamaha spinymussel <sup>1</sup>	<i>Elliptio spinosa</i>	E	E	Ben Hill, Coffee, Glynn, Liberty, Long, McIntosh, Tattnall, Wayne, Wilcox,
Fat three-ridge <sup>1</sup>	<i>Amblema neislerii</i>	E	E	Baker, Calhoun, Clay, Colquitt, Crisp, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Randolph, Seminole, Sumter, Turner, Worth
Gulf moccasinshell <sup>1</sup>	<i>Medionidus penicillatus</i>	E	E	Baker, Calhoun, Clay, Colquitt <sup>2</sup> , Crisp, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Randolph <sup>2</sup> , Seminole <sup>2</sup> , Sumter, Turner <sup>2</sup> , Worth
Purple bankclimber <sup>1</sup>	<i>Elliptioideus sloatianus</i>	T	T	Baker, Calhoun, Clay, Colquitt <sup>2</sup> , Crisp, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Randolph <sup>2</sup> , Seminole <sup>2</sup> , Sumter, Thomas, Turner <sup>2</sup> , Worth
Ochlockonee moccasinshell <sup>1</sup>	<i>Medionidus simpsonianus</i>	E	E	Colquitt, Decatur, Mitchell, Thomas Worth
Oval pigtoe <sup>1</sup>	<i>Pleurobema pyriform</i>	E	E	Baker, Calhoun, Clay, Colquitt <sup>2</sup> , Crisp, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Randolph <sup>2</sup> , Seminole <sup>2</sup> , Sumter, Thomas, Turner <sup>2</sup> , Worth
Shinyrayed pocketbook <sup>1</sup>	<i>Lampsilis subangulata</i>	E	–	Baker, Calhoun, Clay, Colquitt <sup>2</sup> , Crisp, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Randolph <sup>2</sup> , Seminole <sup>2</sup> , Sumter, Thomas, Turner <sup>2</sup> , Worth
<b>Amphibians</b>				
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T	T	Ben Hill, Berrien, Brooks, Irwin, Lanier, Liberty, Long, McIntosh, Ware, Worth
Reticulated flatwoods salamander	<i>Ambystoma bishopi</i>	E	–	Baker <sup>1</sup> , Early, Calhoun, Dougherty, Lee, Miller <sup>1</sup>

Common Name	Scientific Name	Federal Listing	State Listing	County
Striped newt	<i>Notophthalmus perstriatus</i>	C	T	Baker, Ben Hill, Berrien, Brantley, Brooks, Colquitt, Cook, Early, Echols, Glynn, Lanier, Liberty, Long, Lowndes, Irwin, Tattnall, Tift, Wilcox
<b>Reptiles</b>				
American alligator	<i>Alligator mississippiensis</i>	T (S/A)	–	All counties
Eastern indigo snake	<i>Drymarchon corais</i>	T	T	Atkinson, Baker, Ben Hill, Berrien, Brantley, Brooks, Clay, Clinch, Coffee, Colquitt, Cook, Decatur, Early, Echols, Glynn, Irwin, Lanier, Liberty, Long, Lowndes, McIntosh, Miller, Tattnall, Tift, Turner, Randolph, Seminole, Ware, Wayne, Wilcox, Worth
Gopher tortoise	<i>Gopherus polyphemus</i>	C	T	All counties
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	E	Glynn, Liberty, McIntosh
Green sea turtle	<i>Chelonia mydas</i>	T	T	Glynn, Liberty, McIntosh
Loggerhead sea turtle	<i>Caretta caretta</i>	T	E	Glynn, Liberty, McIntosh
<b>Birds</b>				
Wood stork	<i>Mycteria americana</i>	E	E	Atkinson, Baker, Berrien, Brantley, Brooks, Colquitt, Cook, Dougherty, Glynn, Lanier, Lee, Liberty, Long, Lowndes, McIntosh, Mitchell, Thomas, Turner, Wayne, Worth
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E	Atkinson, Baker, Ben Hill, Brantley, Brooks, Decatur, Liberty, Long, Seminole, Thomas Tattnall, Thomas, Turner, Thomas, Ware, Wilcox, Worth,
Red knot	<i>Calidris canutus rufa</i>	PT	-	Glynn, Liberty, McIntosh
Piping plover <sup>1</sup>	<i>Charadrius melodus</i>	T	T	Glynn, Liberty, McIntosh
<b>Mammals</b>				
North Atlantic right whale <sup>1</sup>	<i>Eubalaena glacialis</i>	E	E	Glynn, Liberty, McIntosh
West Indian manatee	<i>Trichechus manatus</i>	E	E	Glynn, Liberty, McIntosh
<b>Flowering Plants</b>				
American chaffseed	<i>Schwalbea americana</i>	E	E	Baker, Colquitt, Dougherty, Early, Miller, Mitchell, Thomas, Worth,
Cooley's meadowrue	<i>Thalictrum cooleyi</i>	E	E	Dougherty, Mitchell, Worth,
Canby's dropwort	<i>Oxypolis canbyi</i>	E	E	Dooly, Dougherty, Lee, Sumter
Fringed campion	<i>Silene polypetala</i>	E	E	Decatur, Dooly

Common Name	Scientific Name	Federal Listing	State Listing	County
Hairy rattleweed	<i>Baptisia arachnifera</i>	E	E	Brantley, Glynn, Wayne
Harperella	<i>Ptilimnium nodosum</i>	E	E	Dooly
Pondberry	<i>Lindera melissifolia</i>	E	E	Baker, Calhoun, Crisp, Dougherty, Miller, Mitchell, Randolph, Turner, Worth,
Relict trillium	<i>Trillium reliquum</i>	E	E	Baker, Calhoun, Clay, Crisp, Dooly, Dougherty, Early, Lee, Miller, Randolph, Sumter, Turner, Worth,
<b>Conifers and Cycads</b>				
Florida torreya	<i>Torreya taxifolia</i>	E	E	Decatur, Seminole

Source: USFWS 2014a; GADNR 2013

C = Candidate

E = Endangered

T(S/A) = threatened due to similarity of appearance

<sup>1</sup> Designated critical habitat in the county

<sup>2</sup> No critical habitat designated in the county

PT = Proposed Threatened

T = Threatened

Due to the nature of the actions proposed within MOAs and Ranges, including the Coastal MOAs which do not extend over marine habitat, no impacts to fish, marine, and invertebrate species (including critical habitat for these taxon) are expected to occur because the proposed activities would not result in ground disturbance or potential impacts to water quality. For the same reasons, no impacts are expected to federally-listed flowering plants within these MOAs and range.

Three species are listed under the ESA as either threatened or endangered and occur on Moody AFB: wood stork (federally and state endangered), gopher tortoise (federally candidate and state threatened), and eastern indigo snake (*Drymarchon corais*) (federally and state threatened). No critical habitat is found on Moody AFB. The gopher tortoise occupies habitats with a well-drained sandy substrate, ample herbaceous vegetation for food, and sunlit areas for nesting, including sandhill, sand pine scrub, pine flatwoods, dry prairie, coastal grasslands and dunes, and mixed hardwood-pine communities. Gopher tortoises have been documented on both the main base and the Grand Bay Weapons Range. Eastern indigo snake habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields. They are frequently in association with gopher tortoise burrows and have been documented on the Grand Bay Weapons Range (Moody AFB 2013).

The wood stork occurs primarily in marshes, swamps, lagoons, ponds, and occasionally in brackish wetlands. It nests mostly in the upper parts of cypress trees, mangroves, or dead hardwoods over water or on islands along streams or adjacent to shallow lakes. Moody AFB has no permanent wood stork colonies; however, the stork has been observed on the installation on a sporadic basis while migrating (Moody AFB 2013). Wood stork colonies have been documented on Moody 1 MOA (which includes portions all the MOAs in the Proposed Action with the exception of Moody 3 MOA and the Coastal MOAs), Brooks, and Brantley Counties. For protection of roosting birds, Moody AFB establishes a 1-mile lateral buffer zone around roost sites during the nesting season. In addition, all known bald eagle nests must be avoided by 1-mile laterally and 1,500 ft AGL from September 15 through June 1. The

locations of wood stork and bald eagle nests are provided to aircrews on an annual basis, and pilots are required to avoid these sites based on the established buffer zones.

Other federally-listed species that occur under the airspace include three amphibians, a reptile, and three avian species. Both the threatened frosted flatwoods salamander (*Ambystoma cingulatum*) and the endangered reticulated flatwoods salamander (*Ambystoma bishopi*) are endemic to the lower southeastern Coastal Plain, occurring in what were historically longleaf pine-wiregrass flatwoods and savannas. Critical habitat occurs in several counties for reticulated flatwoods salamander under the MOAs. The striped newt occurs in isolated, temporary ponds associated with well-drained sands and the surrounding uplands. The American alligator is listed as federally threatened based on the similarity of appearance to the endangered American crocodile (*Crocodylus acutus*). The alligator occurs in wetland areas on Moody AFB and under the airspace.

The red-cockaded woodpecker (*Picoides borealis*) prefers mature pine forests, specifically those with long-leaf pines averaging 80-120 years old and loblolly pines (*Pinus taeda*) averaging 70-100 years old. It excavates cavities in living pine trees and is faithful to its particular tree. No nesting birds have been found on Moody AFB or the Grand Bay Weapons Range; however, habitat for the species occurs throughout the area under the airspace. The red knot (*Calidris canutus rufa*) is a shorebird that over-winters along the Georgia coast, primarily on sandy beaches and mud flats. Piping plovers (*Charadrius melodus*) also prefer the sandy beaches and shorelines of the coast. Critical habitat for the piping plover occurs along the Georgia coast but occurs outside of the MOAs and ranges for the Proposed Action.

In addition to those federally-listed species, which are also state-listed, several additional state listed species are potentially located on Moody AFB as well as under the proposed airspace (**Table 3.6-2**). The list only includes faunal species, since no ground disturbance would occur and therefore, impacts to the vegetation from the Proposed Action would not occur.

**Table 3.6-2. State Listed, Proposed, and Candidate Species Known to or That May Occur at Moody AFB ROI**

Common Name	Scientific Name	State Listing	County
<b>Invertebrates</b>			
Altamaha arc mussel	<i>Alasmidonta arcula</i>	T	Ben Hill, Coffee, Long, Tattnall, Wayne
Delicate spike	<i>Elliptio arctata</i>	E	Baker, Calhoun, Decatur, Dooly, Dougherty, Early, Lee, Miller, Mitchell, Quitman, Sumter, Wayne, Worth
Dougherty burrowing crayfish	<i>Cambarus doughertyensis</i>	E	Baker, Calhoun, Dougherty
Inflated spike	<i>Elliptio purpurella</i>	T	Baker, Calhoun, Colquitt, Crisp, Decatur Dooly, Lee, Early, Miller, Mitchell, Randolph, Sumter, Worth,
Muckalee crayfish	<i>Procambarus gibbus</i>	T	Baker, Lee, Sumter
Rayed creekshell	<i>Anodontoidea radiatus</i>	T	Baker, Calhoun, Decatur, Early, Lee, Miller, Sumter,
Savannah lilliput	<i>Toxolasma pullus</i>	T	Long, Tattnall, Wayne

Common Name	Scientific Name	State Listing	County
Southern elktoe	<i>Alasmidonta triangulata</i>	E	Baker, Crisp, Decatur, Sumter,
<b>Fish</b>			
Alabama shad	<i>Alosa alabamae</i>	T	Brooks, Colquitt, Cook, Decatur, Dougherty, Lowndes
Blackbanded sunfish	<i>Enneacanthus chaetodon</i>	E	Berrien, Thomas, Turner, Ware
Bluenose shiner	<i>Pteronotropis welaka</i>	T	Calhoun, Decatur, Dooly, Dougherty, Early, Lee, Miller, Randolph
Halloween darter	<i>Percina crypta</i>	T	Baker, Lee, Worth,
<b>Amphibians</b>			
Georgia blind salamander	<i>Haideotriton wallacei</i>	T	Decatur, Dougherty
<b>Reptiles</b>			
Alligator snapping turtle	<i>Macrochelys temminckii</i>	T	Baker, Brooks, Colquitt, Cook, Decatur, Dooly, Echols, Lanier, Lee, Lowndes, Miller, Mitchell, Quitman, Seminole Sumter, Thomas
Barbour's map turtle	<i>Graptemys barbouri</i>	T	Baker, Crisp, Decatur, Dooly, Dougherty, Lee, Miller, Mitchell, Seminole, Sumter, Worth,
Southern hognose snake	<i>Heterodon simus</i>	T	Baker, Ben Hill, Coffee, Decatur, Dougherty, Early, Irwin, Lee, Liberty, Long, Miller, Mitchell, Quitman, Tattnall, Thomas, Wayne, Wilcox
<b>Birds</b>			
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	Baker, Berrien, Brooks, Clay, Coffee, Colquitt, Cook, Decatur, Dougherty, Early, Glynn, Lanier, Lee, Liberty, Long, Lowndes, McIntosh, Mitchell, Quitman, Sumter, Seminole, Thomas, Worth
Gull-billed tern	<i>Sterna nilotica</i>	T	Glynn, McIntosh
Wilson's plover	<i>Charadrius wilsonia</i>	T	Glynn, Liberty, McIntosh
<b>Mammals</b>			
Round-tailed muskrat	<i>Neofiber alleni</i>	T	Brantley, Ware
Southeastern pocket gopher	<i>Geomys pinetis</i>	T	Baker, Brooks, Crisp, Dougherty, Early, Tattnall, Worth

Source: GADNR 2013

E = Endangered

T = Threatened

Four state-listed threatened species, the southern hognose snake (*Heterodon simus*), alligator snapping turtle (*Macrochelys temminckii*), bald eagle (*Haliaeetus leucocephalus*), and round-tailed muskrat (*Neofiber alleni*), occur on Moody AFB or the Grand Bay Range (Moody AFB 2013). Round-tailed muskrats are known to occur in wetlands on Grand Bay Weapons Range, including isolated wetlands within the boundaries of the Grand Bay Weapons Range impact area complex (Moody AFB 2013). Wetland habitat degradation on the installation has prevented populations from being established on Moody AFB proper. Alligator snapping turtle are restricted to aquatic habitats while southern hognose snakes prefer sandhill, pine flatwood, and coastal dune habitats.

Bald eagles, which are protected under the BGEPA and the MBTA and are a state threatened species, live near lakes, rivers, and marshes where they can find fish, their primary food source. The nearest nest is located at Grassy Pond Recreational Area. The peregrine falcon (*Falco peregrinus anatum*), a state endangered species, was recorded on Moody AFB during migration season but is not considered a permanent resident at the installation (Moody AFB 2013).

Four other vertebrate species potentially occur under the airspace. The Georgia blind salamander (*Haideotriton wallacei*) has a very limited distribution in the southeast, confined to inland karsts, caves and subterranean habitats. Barbour's map turtle (*Graptemys barbouri*) reside in the Chattahoochee, Flint, and Chipola Rivers where the waters are clear flowing with limestone rock and cobble bottoms (SREL 2014). Gullied bill terns and Wilson's plovers (*Charadrius wilsonia*) occur along the Georgia coast where the Coastal MOAs are located; however, neither MOA extends over the preferred sandy beach habitat for these species (SREL 2014). The Southeastern pocket gopher (*Geomys pinetis*) is potentially distributed throughout the MOAs in the southern portion of Georgia where upland areas of dry, sandy soil or well drained, fine-grained gravely soils, allow burrows to be easily dug (University of Georgia 2008).

### **3.6.2 Alternative B: Mountain Home AFB**

#### **3.6.2.1 Wildlife**

Like most installations, wildlife found at Mountain Home AFB are species who are adapted to human presence and a more urban setting. Numerous wildlife species have been documented on the installation occupying the four dominant wildlife habitats: (1) landscaped areas around residential and installation facilities, (2) isolated sagebrush flats, (3) flat areas dominated by exotic annual weed species, and (4) rubble piles dominated by exotic annual weed species (Mountain Home AFB 2011a). Common small mammals found on the installation include voles (*Microtus* spp.), deer mice (*Peromyscus maniculatus*), mountain cottontails (*Sylvilagus nuttallii*), woodrat (*Neotoma lepida*), and Ord's kangaroo rat (*Dipodomys ordii*). Other mammal species include big brown bat (*Eptesicus fuscus*), coyotes, raccoon, black-tailed jackrabbit (*Lepus californicus*), and badger (*Taxidea taxus*). Aquatic habitat is limited on the installation which limits potential amphibian species. However, several reptile species have been documented on the installation and include: western fence lizard (*Sceloporus occidentalis*), sagebrush lizard (*Sceloporus graciosus*), gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus viridis*), and western whiptail (*Aspidoscelis tigris*) (Mountain Home AFB 2012c).

The Snake River Birds of Prey National Conservation Area (NCA) surrounds Mountain Home AFB. The NCA contains 484,873 acres of land along the Snake River corridor and adjacent uplands and provides habitat for one of the largest concentration of raptors in North America (Mountain Home AFB 2011a). Many raptors have been observed on the installation, including prairie falcon (*Falco mexicanus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and great-horned owl



(*Bubo virginianus*). The variety of habitat on the installation also provides for a diversity of songbird species which includes: savannah sparrows (*Passerculus sandwichensis*), vesper sparrows (*Pooecetes gramineus*), American robins (*Turdus migratorius*), house finches (*Carpodacus mexicanus*), killdeer (*Charadrius vociferus*), Brewer's blackbirds (*Agelaius phoeniceus*), horned larks (*Eremophila alpestris*), and western meadowlarks (*Sturnella neglecta*) as well as others. The storage lagoons in the western portion of the installation attract many waterfowl species; however, Mountain Home AFB has an active program to discourage waterfowl use of these lagoons for BASH prevention (Mountain Home AFB 2011a, 2012c).

The airspace included for the Proposed Action for Mountain Home includes the MHRC, which encompasses Saylor Creek Air Force Range and Juniper Butte Air Force Range within the Jarbidge North MOA and the Oregon Saddle A and B MOAs. This airspace encompasses the Northern Basin and Range ecoregion (USEPA 2013) dominated by arid sagebrush and steppe and grasslands. Avian species in the area include ferruginous hawk (*Buteo regalis*), short-eared owl (*Asio flammeus*), golden eagle (*Aquila chrysaetos*), red-tailed hawk, turkey vulture (*Cathartes aura*), sage sparrows (*Amphispiza belli*), dove (*Zenaidura macroura*), western kingbird (*Tyrannus verticalis*), mountain quail (*Oreortyx pictus*) (Mountain Home AFB 2012c).

The mammal community contains large ungulate species such as mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), elk (*Cervus canadensis*), and feral horses (*Equus caballus*) as well as the cougar (*Puma concolor*). Smaller mammal species are similar to those found on Mountain Home AFB with the addition of the sagebrush vole (*Lemmyscus curtatus*), bobcat, kit fox (*Vulpes macrotis*), and red fox (*Vulpes vulpes*). Reptile species are similar to those found on the installation.

### 3.6.2.2 Special Status Species

The Proposed Action encompasses habitat for federal and state protected species located in three states: Idaho, Nevada, and Oregon. Although federally-listed plant species are presented in **Table 3.6-3**, due to the nature of the actions proposed within the airspace, plant, fish, and invertebrate species were excluded from extensive review and analysis because the proposed activities would not result in ground disturbance or impacts to water quality.

**Table 3.6-3. Federally Listed, Proposed, and Candidate Species Known to or That May Occur in the Mountain Home AFB ROI**

Common Name	Scientific Name	Federal Listing	State Listing	State/County
<b>Fish</b>				
Bull trout <sup>1</sup>	<i>Salvelinus confluentus</i>	T	T (ID)	ID-Elmore, Owyee; NV-Elko; OR-Malheur
Clover Valley speckled dace	<i>Rhinichthys osculus oligoporus</i>	E	E	NV-Elko
Desert dace <sup>1</sup>	<i>Eremichthys acros</i>	T	T	NV-Humboldt
Independence Valley speckled dace	<i>Rhinichthys osculus lethoporus</i>	E	E	NV-Elko
Lahontan cutthroat trout	<i>Oncorhynchus clarkii henshawi</i>	T	T (OR)	NV-Elko, Humboldt; OR-Malheur
<b>Invertebrates</b>				
Banbury Springs limpet	<i>Lanx sp.</i>	E	–	ID-Elmore

Common Name	Scientific Name	Federal Listing	State Listing	State/County
Bliss Rapids snail	<i>Taylorconcha serpenticola</i>	T	–	ID-Elmore, Owyee
Bruneau hot springsnail	<i>Pyrgulopsis bruneauensis</i>	E	–	ID-Owyee
Snake River Physa snail	<i>Physa natricina</i>	E	–	ID-Elmore, Owyee
<b>Amphibians</b>				
Columbia spotted frog	<i>Rana luteiventris</i>	C	–	ID Owyee; NV-Elko; OR-Malheur
<b>Birds</b>				
Greater sage-grouse	<i>Centrocercus urophasianus</i>	C	–	ID-Elmore, Owyee; NV-Elko, Humboldt; OR-Malheur
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	PT	–	ID-Elmore, Owyee; OR-Malheur
<b>Mammals</b>				
Canada lynx	<i>Lynx canadensis</i>	T	S	ID-Elmore
North American wolverine	<i>Gulo gulo luscus</i>	PT	–	ID-Elmore
<b>Flowering Plants</b>				
Goose Creek milkvetch	<i>Astragalus anserinus</i>	C	–	NV-Elko
Slickspot peppergrass <sup>1</sup>	<i>Lepidium papilliferum</i>	PT		ID-Elmore, Owyee
<b>Conifers and Cycads</b>				
Whitebark pine	<i>Pinus albicaulis</i>	C	–	ID-Elmore; NV-Elko, Humboldt

Sources: IDFG 2014, NNHP 2014, Oregon Biodiversity Information Center 2010, ODFW 2012, USFWS 2014a

C = Candidate

PT = Proposed Threatened

E = Endangered

T = Threatened

S = Sensitive

<sup>1</sup> Designated critical habitat in the county

No federally listed threatened or endangered species have been observed on Mountain Home AFB. Two mammal, two avian, and one amphibian federally-listed species potentially occur under the airspace of the Proposed Action. In addition, critical habitat is designated for two aquatic species under the airspace. The Canada lynx (*Lynx canadensis*) prefers subalpine and montane coniferous forests where an abundance of snowshoe hare occurs particular in the winter months. The wolverine (*Gulo gulo luscus*) uses similar high elevation subalpine areas for summer habitat, and mid-elevation coniferous forest for winter habitat. Potential habitat for the lynx and wolverine lies north of the Proposed Action area (IDFG 2005 a and b).

One species, a species proposed for reinstatement as threatened under the ESA, occurs on Air Force land in Idaho. Slickspot peppergrass (*Lepidium papilliferum*) was originally listed as threatened on December 7, 2009 (USFWS 2010a). The slickspot peppergrass occurs along Idaho's western Snake River Plain and neighboring foothills in Owyhee, Payette, Gem, Canyon, Ada, and Elmore Counties in the semiarid sagebrush-steppe ecosystems (Mountain Home AFB 2012c). The plant has been found throughout the Juniper Butte Range and critical habitat is distributed through both Elmore and Owyhee Counties, Idaho. Mountain Home AFB currently has a biological opinion for Air Force activities in the Juniper Butte Range and the potential effects as well as conservation measures for the slickspot peppergrass (USFWS 2010a).

In addition to the slickspot peppergrass, three other listed species occur under the airspace. The greater sage grouse (*Centrocercus urophasianus*) is listed as a candidate species in all counties within the three states. On March 23, 2010, the USFWS announced a 12-month finding on the petition to list the greater sage grouse, finding that the listing was warranted but precluded by higher priority species (USFWS 2010b). The sage grouse is sagebrush obligate species which comprises a large percentage of its diet. Sage-grouse exhibit a degree of fidelity to leks, which occur in open areas in sagebrush habitat. According to Idaho Department of Fish and Game (IDFG) data from 2010, Saylor Creek Range contains five sage-grouse leks, areas used for mating displays and breeding. The IDFG considers two of the leks as active because birds have used them within the last seven years (Mountain Home AFB 2012c). Sage grouse are also frequently observed on Juniper Butte Range (Mountain Home AFB 2012c).

The Great Basin population of the Columbia spotted frog (*Rana luteiventris*) is a candidate species, occurring under the airspace in southwestern Idaho, eastern Oregon, and the northern drainages of Nevada. In Idaho, it occurs in the mid-elevations of the Owyhee uplands in spring seeps, meadows, marshes, ponds and streams, and other areas where there is abundant vegetation (USFWS 2014c).

Yellow-billed cuckoos (*Coccyzus americanus*) are migrants that prefer open woodland with clearings and thick, scrubby undergrowth along watercourses. The species is very localized and likely scattered throughout the airspace and is proposed as threatened.

The IDFG categorizes species as state threatened or endangered, game, protected nongame, and predatory wildlife. Oregon and Nevada also classify species as state listed threatened or endangered (**Table 3.6-4**). No Nevada state listed species occur in the counties under the airspace.

**Table 3.6-4. State Listed, Proposed, and Candidate Species Known to or That May Occur in the Mountain Home AFB ROI**

Common Name	Scientific Name	State Listing	State/County
<b>Birds</b>			
American white pelican	<i>Pelecanus erythrorhynchos</i>	Protected non-game	ID - all counties
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	ID, OR – all counties
Black-throated sparrow	<i>Amphispiza bilineata</i>	Special status	ID – Owyhee, Elmore
Brewer's sparrow	<i>Spizella breweri</i>	Protected non-game	ID – all counties
Burrowing owl	<i>Athene cunicularia</i>	Protected non-game	ID – all counties
Ferruginous hawk	<i>Buteo regalis</i>	Special status	ID – Owyhee, Elmore
Loggerhead shrike	<i>Lanius ludovicianus</i>	Special status	ID – Owyhee, Elmore
Long-billed curlew	<i>Numenius americanus</i>	Protected non-game	ID – all counties
Peregrine Falcon	<i>Falco peregrinus</i>	T	ID – all counties
Sage sparrow	<i>Amphispiza belli</i>	Special status	ID – Owyhee
Sage thrasher	<i>Oreoscoptes montanus</i>	Special status	ID – Owyhee
White-faced ibis	<i>Plegadis chihi</i>	Protected non-game	ID – all counties
<b>Mammals</b>			
Kit fox	<i>Vulpes macrotis</i>	T; Protected non-game	OR; ID – all counties

Common Name	Scientific Name	State Listing	State/County
Long-eared myotis	<i>Myotis evotis</i>	Special status	ID – Owyhee, Elmore
Townsend’s big-eared bat	<i>Corynorhinus townsendii</i>	Special status	ID – Owyhee
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Special status	ID – Owyhee, Elmore
Yuma myotis	<i>Myotis yumanensis</i>	Special status	ID – Owyhee, Elmore
<b>Plant</b>			
Davis’ peppergrass	<i>Lepidium davisii</i>	Priority 3	ID – all counties

Sources: IDFG 2014, INPS 2011, MHAFF 2012c, NNHP 2014, Oregon Biodiversity Information Center 2010, ODFW 2012.

T = Threatened

Two Idaho special status avian species occur on the base as well as under the airspace. These include burrowing owl (*Athene cunicularia*) and long-billed curlew (*Numenius americanus*). The burrowing owl is an Idaho state protected, non-game species and a USFWS Bird of Conservation Concern. It inhabits dry, open grasslands, often times in urban highly disturbed areas. They nest in burrows excavated by mammals such as badgers, ground squirrels, or coyotes. Burrowing owls have been observed immediately adjacent to the flightline as well as in other areas around the installation (USAF 2013a). The long-billed curlew is an Idaho state protected non-game species and a USFWS Birds of Conservation Concern. It prefers prairies, open shrub-steppe, and grassy wet meadows. On Mountain Home AFB, the long-billed curlews can be found in a few areas including the annual grasslands near the north end of the flightline (USAF 2013a).

Davis’ peppergrass (*Lepidium davisii*) is a rare plant categorized by the Idaho Native Plant Society as a Priority Three species (INPS 2011). Populations are scattered throughout an area of southwestern and south-central Idaho, north-central Nevada, and southeastern Oregon. This plant species has been documented under the airspace on the Saylor Creek Range as well as on the installation (Mountain Home AFB 2012c).

Under the airspace, a large variety of vegetation communities are found, from sagebrush to pinyon-juniper woodlands and grasslands. Several species of concern in Idaho are found within and underlying the airspace and are managed through procedures prescribed in the Mountain Home AFB INRMP (Mountain Home AFB 2012c). Two raptor species listed as state threatened occur in the area of the Proposed Action: the bald eagle and the peregrine falcon. A bald eagle was observed on Mountain Home AFB in 2010 and the species is known to winter west of the Saylor Creek Range (Mountain Home AFB 2012c). Peregrine falcons nest along the Snake River; however, use of Mountain Home AFB for foraging would be low because of the low availability of prey and the distance from the canyon (Mountain Home AFB 2012c).

The long-eared myotis (*Myotis evotis*) and Yuma myotis (*Myotis yumanensis*) have been documented on Mountain Home AFB associated with urban forests and buildings (Mountain Home AFB 2012c) as well as other areas under the airspace such as the Saylor Creek Range. The western small-footed myotis (*Myotis ciliolabrum*) and Townsend’s big-eared bat (*Corynorhinus townsendii*) have also been documented on the Saylor Creek Range and are found in caves and mines during winter hibernation. The kit fox is a small arid environment carnivore listed as threatened in Oregon. This desert-dwelling

carnivore inhabits desert shrub and shrub-grassland communities with sparse ground cover where loose soils allow for easier excavation of dens.

### **3.6.3 Alternative C: Shaw AFB**

#### **3.6.3.1 Wildlife**

The installation contains suitable habitat for a variety of faunal species adapted to an anthropogenic environment. Although a few pockets of forest can be found on the installation, including woodlots comprised of pine plantations and oak/hickory, the majority of Shaw AFB is comprised of landscaped areas such as lawns, ornamental trees, or maintained open fields of grass. The oak/hickory forests occurs in the northern portion of Shaw AFB and the pine plantations, consisting primarily of 25- to 35-year-old loblolly pine trees, in the southeastern corner of Shaw AFB (Shaw AFB 2014a). The mammal community is representative generalist species such as the coyote, red fox, opossum, eastern cottontail, as well as white-tailed deer. Feral hogs (*Sus scrofa*), an invasive species, have recently begun to invade the southeast portion of the Poinsett range. Common reptiles include black racer (*Coluber constrictor*), eastern fence lizard (*Sceloporus undulatus*), eastern garter snake (*Thamnophis sirtalis*), and timber rattlesnake (*Crotalus horridus*) (USAF 2013a).

Common birds include bobwhite quail, wild turkey, red-tailed hawk, red-shouldered hawk, blue jay, and American crow (USAF 2013a). BASH issues for the installation are primarily associated with waterfowl at the ponds on the Carolina Pines Golf Course. These pond sites attract waterfowl on a year-round basis, with periods of greatest intensity during the spring (nesting) and fall and winter migratory seasons.

The Proposed Action covers airspace within both South Carolina and North Carolina. Habitats within the Southern Coastal Plains, Middle Atlantic Coastal Plains, and Southern Plains ecoregions (USEPA 2013a) include evergreen-oak and magnolia forests, interior swamps and pine forests. Species under the airspace are diverse as the habitat and include raccoon, Virginia opossum, black bear, white-tailed deer, bobcat, flying squirrel (*Glaucomys volans*), as well as numerous ground-dwelling rodent species. Avian species in the area are diverse as the area is part of the Atlantic flyway. Herpetofaun species include alligator, copperhead, and scrub lizard (*Sceloporus woodi*) (CEC 2011).

#### **3.6.3.2 Special Status Species**

For purposes of this assessment, special status or sensitive biological resources are defined as those plant and animal species listed as threatened, endangered, proposed, or candidate by the USFWS under the ESA and species that are listed by the state of South Carolina and North Carolina. **Table 3.6-5** presents the species which are federally listed in Sumter County and may potentially occur at Shaw or under the Poinsett Range and MOA as well as the nine other counties under the Gamecock MOAs (Lancaster, Kershaw, Clarendon, Williamsburg, Georgetown and small portions of Berkeley, Florence, Calhoun, and Marion) in South Carolina and the three counties under the Gamecock A MOA in North Carolina (Bladen, Columbus, and Robeson).

**Table 3.6-5. Federally Listed, Proposed, and Candidate Species Known to or That May Occur in the Shaw AFB ROI**

Common Name	Scientific Name	Federal Listing	State Listing	County
<b>Fish</b>				
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	E	SC: Berkeley, Calhoun, Clarendon, Florence, Georgetown, Marion, Sumter, Williamsburg; NC: Bladen, Columbus
Waccamaw silverside <sup>1</sup>	<i>Menidia extensa</i>	T	T	NC: Columbus
<b>Invertebrates</b>				
Carolina heelsplitter <sup>1</sup>	<i>Lasmigona decorata</i>	E	E	SC: Lancaster, Kershaw
<b>Amphibians</b>				
Frosted flatwoods salamander <sup>1</sup>	<i>Ambystoma cingulatum</i>	T	E	SC: Berkeley
<b>Reptiles</b>				
American alligator	<i>Alligator mississippiensis</i>	T (S/A)	-	All counties
Green sea turtle	<i>Chelonia mydas</i>	T	-	SC: Georgetown
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	-	SC: Georgetown
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	-	Georgetown
<b>Birds</b>				
Kirtland's warbler	<i>Setophaga kirtlandii</i>	E	-	SC: Georgetown
Piping plover <sup>1</sup>	<i>Charadrius melodus</i>	T	-	Georgetown
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E	SC: Berkeley, Calhoun, Clarendon, Florence, Georgetown, Kershaw, Marion, Sumter, Williamsburg, NC: Bladen, Columbus, Robeson
Red knot	<i>Calidris canutus rufa</i>	PT	-	Georgetown
Wood stork	<i>Mycteria americana</i>	E	E	Berkeley, Georgetown, Marion, Williamsburg; NC: Columbus
<b>Mammals</b>				
West Indian manatee	<i>Trichechus manatus</i>	E	E	SC: Berkeley, Georgetown
<b>Flowering Plants</b>				
American chaffseed	<i>Schwalbea americana</i>	E	E	SC: Berkeley, Clarendon, Florence, Georgetown, Sumter, Williamsburg; NC: Bladen

Common Name	Scientific Name	Federal Listing	State Listing	County
Canby's dropwart	<i>Oxypolis canbyi</i>	E	E	SC: Berkeley, Clarendon, Florence, Georgetown, Marion, Sumter, Williamsburg
Cooley's meadowrue	<i>Thalictrum cooleyi</i>	E	E	NC: Columbus
Georgia aster	<i>Symphotrichum georgianum</i>	C	-	SC: Kershaw
Little amphianthus	<i>Amphianthus pusillus</i>	T	-	SC: Lancaster
Michaux's sumac	<i>Rhus michauxii</i>	E	-	SC: Kershaw; NC: Robeson
Pondberry	<i>Lindera melissifolia</i>	E	T (NC)	SC: Berkeley, Georgetown, Marion; NC: Bladen
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	-	SC: Georgetown
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E	-	SC: Lancaster
Smooth coneflower	<i>Echinacea laevigata</i>	E	-	SC: Lancaster
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	E	E	NC: Bladen, Columbus
<b>Ferns and Allies</b>				
Black spored quillwort	<i>Isoetes melanospora</i>	E	-	SC: Lancaster

Source: USFWS 2014a and b; NCSU 2014; SCDNR 2012

C = Candidate

PT = Proposed Threatened

E = Endangered

T = Threatened

T(S/A) = threatened due to similarity of appearance

<sup>1</sup> Designated critical habitat in the county

To date, no federally listed species have been documented at Shaw AFB. The red-cockaded woodpecker, a federally-listed endangered species, is the only listed species known to occur on the Poinsett Range. The red-cockaded woodpecker prefers mature pine forests, specifically those with long-leaf pines and loblolly pines. The red-cockaded woodpecker population at Poinsett Range has been monitored since 1994, and extensive records have been kept since 2001. The population has more than tripled since 2001 and consisted of 19 active clusters and 17 potential breeding groups in 2006. No other federally listed avian species, including the federally protected and state listed bald eagle, occur on Shaw AFB or the Poinsett Range.

Wood stork populations are concentrated along the coastal counties nesting typically in the upper branches of trees that are in standing water often adjacent to open water for foraging (SCDNR 2013). Three other coastal avian species occur within Georgetown County. Kirtland's warbler (*Setophaga kirtlandii*) is a migratory species along the South Carolina coast on its way to breeding areas in Michigan. The red knot is a shorebird who over-winter along the South Carolina coast, primarily on sandy beaches and mud flats. Piping plovers also prefer the sandy beaches and shorelines of the coast. Although Gamecock B MOA occurs over Georgetown County where the red knot, Kirtland's warbler, and piping plover are listed, the MOA does not include areas above the coastal region. Critical habitat for the piping plover occurs along the South Carolina coast outside of the airspace.



Marine habitat for the listed West India manatee (*Trichechus manatus*), the green sea turtle (*Chelonia mydas*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), and leatherback sea turtle (*Dermochelys coriacea*) do not occur underneath the proposed airspace. Critical habitat for three other species occurs under the airspace for the Proposed Action. Critical habitat for the Carolina heelsplitter (*Lasmigona decorata*) is confined to a few watercourses in Lancaster and Kernshaw Counties and the Waccamaw silverside (*Menidia extensa*) critical habitat is confined to Lake Waccamaw in its entirety. The frosted flatwoods salamander is endemic to the lower southeastern Coastal Plain, occurring in what were historically longleaf pine-wiregrass flatwoods and savannas. Critical habitat for the species is listed in Berkeley County; however, the Gamecock D MOA only overlies a small portion of the northern end of the county and does not occur over this species' critical habitat.

State listed species that potentially occur on Shaw AFB or under the South Carolina airspace include one fish, two amphibians, one reptile, four avian, and one mammal species (**Table 3.6-6**).

**Table 3.6-6. State Listed, Proposed, and Candidate Species Known to or That May Occur in the Shaw AFB ROI**

Common Name	Scientific Name	State Listing	County
<b>Fish</b>			
Carolina pygmy sunfish	<i>Elassoma boehlkei</i>	T	SC: Georgetown, Kernshaw; NC: Columbus
Waccamaw darter	<i>Etheostoma perlongum</i>	T	NC: Columbus
<b>Invertebrates</b>			
Atlantic pigtoe	<i>Fusconaia masoni</i>	E	NC: Bladen
Eastern lampmussel	<i>Lampsilis radiata</i>	T	NC: Bladen, Columbus
Savannah Lilliput	<i>Toxolasma pullus</i>	E	NC: Columbus
Tidewater mucket	<i>Leptodea ochracea</i>	T	NC: Columbus
Waccamaw fatmucket	<i>Lampsilis fullerkati</i>	T	NC: Columbus
Waccamaw spike	<i>Elliptio waccamawensis</i>	E	NC: Columbus
Yellow lampmussel	<i>Lampsilis cariosa</i>	E	NC: Bladen, Columbus
<b>Amphibians</b>			
Eastern tiger salamander	<i>Ambystoma tigrinum</i>	T	NC: Robeson
Gopher frog	<i>Rana capito</i>	E/T	SC: Berkeley NC: Bladen, Robeson
Pine Barrens treefrog	<i>Hyla andersonii</i>	T	SC: Kernshaw
<b>Reptiles</b>			
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	E	NC: Bladen, Columbus, Robeson
Eastern coral snake	<i>Micrurus fulvius</i>	E	NC: Bladen, Robeson
Spotted turtle	<i>Clemmys guttata</i>	T	SC: Berkeley, Clarendon, Georgetown
<b>Birds</b>			
American swallow-tailed kite	<i>Elanoides forficatus</i>	E	SC: Berkeley, Georgetown
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	SC: Berkeley, Calhoun, Clarendon, Florence, Georgetown, Kernshaw, Lancaster, Marion, Sumter; NC: Bladen, Columbus
Least tern	<i>Sterna antillarum</i>	T	SC: Berkeley, Georgetown, Sumter
Wilson's plover	<i>Charadrius wilsonia</i>	T	SC: Georgetown

Common Name	Scientific Name	State Listing	County
<b>Mammals</b>			
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	E	SC: Berkeley, Georgetown, Kernshaw, Marion, Sumter, Williamsburg

Source: SCDNR 2012; NCNHP 2013

E = Endangered

T = Threatened

Several invertebrate and vertebrate state- listed species potentially occur under the airspace. Aquatic and herpetofaunal species and their habitat would not be impacted by the Proposed Action as no ground disturbance would occur. Four avian species listed by the states, potentially occur under the airspace. The American swallow-tailed kite (*Elanoides forficatus*) occupies large areas of forested wetlands/mixed pine habitats along the coast. Wilson's plovers also prefer the coastal habitat. Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) characteristically roost in dilapidated buildings or tree cavities near water (SCDNR 2014).

### 3.7 CULTURAL RESOURCES

Cultural resources can be divided into three major categories: archaeological resources (prehistoric and historic), architectural resources, and traditional cultural resources.

- ◆ Archaeological resources are locations where human activity measurably altered the earth or left deposits of physical remains (e.g. stone flakes, arrowheads, or bottles). Archaeological resources can include campsites, roads, fences, trails, refuse middens, battlegrounds, mines, and a variety of other features.
- ◆ Architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance.
- ◆ Traditional cultural resources can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans and other groups consider essential for the continuance of traditional cultures.

Several federal laws and regulations have been established to manage cultural resources, including the National Historic Preservation Act (NHPA) of 1966; the Archaeological and Historic Preservation Act of 1974; the American Indian Religious Freedom Act of 1978; the Archaeological Resource Protection Act of 1979; and the Native American Graves Protection and Repatriation Act of 1990. In addition, US DoD Instruction (DoDI) 4710.02, *Department of Defense Interactions with Federally Recognized Tribes*, governs US DoD interactions with federally recognized tribes and EO 13175, *Consultation and Coordination with Indian Tribal Governments*, charges federal departments and agencies with regular and meaningful consultation with Native American tribal officials in the development of policies that have tribal implications.

Under the NHPA, cultural resources eligible for listing on the National Register warrant consideration with regard to adverse impacts from a Proposed Action. Archaeological and architectural resources generally must be more than 50 years old to be considered for protection under NHPA. However, more recent structures, such as Cold War era military buildings, may warrant protection if they are

“exceptionally significant.” To be considered significant, archaeological or architectural resources must meet one or more criteria as defined in 36 CFR 60.4 for inclusion in the National Register of Historic Places (NRHP):

“The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are associated with the lives or persons significant in our past; or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history” (36 CFR § 60.4).

### 3.7.1 Alternative A (Preferred Alternative): Moody AFB

Moody AFB was established in 1941 and currently encompasses approximately 10,843 acres of federally-owned land. The entire Main Base Cantonment area and the Grand Bay Range have been surveyed for cultural resources. Cultural resources described by these surveys include 23 archaeological sites, 39 isolated archaeological finds, and 234 Cold War-era and older buildings and structures.

American Indian tribes with ties to the area were consulted in the preparation of this document and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action.

Facilities considered under all COAs for execution of this alternative, the years they were constructed, and their NRHP status are listed in **Table 3.7-1**. Building 701 and Building 754 are over 50 years old, the threshold for NRHP eligibility determination.

Building 701 was found not eligible for listing in a determination by the Historic Preservation Division of the Georgia Department of Natural Resources dated September 26, 1996. Eligibility status has not yet been determined for Building 754, a warehouse.

**Table 3.7-1. Moody AFB – Facility NRHP Status**

Facility Name	Year Constructed	NRHP Status
Bldg. 706	1969	Not Evaluated
Bldg. 590	1987	Not Evaluated
Bldg. 788	1980	Not Evaluated
Bldg. 701	1941*	Not Eligible
Bldg. 754	1954*	Not Evaluated
Bldg. 580	1997	Not Evaluated

\*Over fifty years old; age threshold for determining NRHP status.

Grand Bay Range has been surveyed for its archeological and architectural resources. According to the current Moody AFB *Integrated Cultural Resources Management Plan*, archaeological investigations at Moody AFB to date have located two archaeological sites, 9LW52 and 9LW6, and 29 isolated finds on Grand Bay Range. Site 9LW52 remains unevaluated and the eligibility of Site 9LW67 is inconclusive (Moody AFB 2011b).

Townsend Range, which may be used for training under the Proposed Action, lies approximately 112 nautical miles east-northeast of Moody AFB. It is routinely used for training by various military services. Townsend Range is controlled by the Marine Corps Air Station Beaufort and covers approximately 5,182 acres in McIntosh County, Georgia. Townsend Range has been surveyed for cultural resources. That survey identified 14 archaeological sites: twelve prehistoric ceramic scatters and two historical sites dating to the 19th and 20th century. Phase II site evaluations have been conducted at all potentially eligible sites within the range, and none of the sites are eligible for the NRHP (Moody AFB 2006).

### 3.7.2 Alternative B: Mountain Home AFB

Mountain Home AFB has been intensively surveyed for archaeological resources. These surveys have identified a number of isolated artifacts and five potential cultural resource sites, comprising four sheepherder camps and a trash scatter. None are determined eligible for or listed in the NRHP (Mountain Home AFB 2011b).

American Indian tribes with ties to the area were consulted in the preparation of this document and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action.

Several architectural surveys have been conducted at Mountain Home AFB. All buildings on the installation 50 years old or older and Cold War-era structures built before 1990 have been evaluated for NRHP eligibility. Five WWII hangars (Buildings 201, 204, 205, 208, and 211) were found eligible for listing in the NRHP (Watts 1991) and have architecturally significant birchwood bowstring-type roof trusses characteristic of the World War II period (Mountain Home AFB 2011b).

Building 211 and Hangar 1331 are the only NRHP-eligible architectural or historic properties proposed for use under this alternative. All other facilities proposed for use under all COAs are not yet eligible for NRHP listing and their historic significance and integrity have not been evaluated. The construction year, name, and NRHP status of all facilities proposed for use in all COAs for this alternative are listed in **Table 3.7-2**.

**Table 3.7-2. Mountain Home AFB – Facility NRHP Status**

Facility Name	Year Constructed	NRHP Status
Bldg. 1363	1971	Not Evaluated
Hangar 1361	1965	Not Evaluated
Hangar 1331	1955*	Eligible
Bldg. 211	1943*	Eligible
Bldg. 2425	1970	Not Evaluated

\*Over fifty years old; age threshold for determining NRHP status.

Archaeological surveys have identified 3,312 prehistoric archaeological sites on the Saylor Creek Range, typically characterized by Paleoindian and Archaic-period artifact scatter and campsite remains. Of these, 77 sites were determined ineligible for listing; the remainder are either eligible for NRHP listing or have not been assessed. One NRHP-eligible site lies within the Saylor Creek Range Exclusive Use Area, where bombing range impact areas are located. The remains of a World War II-era control tower were discovered in 1997 and found NRHP-eligible. Three historic dams built by the Civilian Conservation Corps have been discovered at Saylor Creek Range and one, the Pothole Reservoir Dam, was determined eligible for listing (Mountain Home AFB 2011b).

At Juniper Butte Range, eight historical archaeological sites associated with ranching and herding activities have been found, along with 18 prehistoric archaeological sites characterized by the presence of stone tools and projectile points. Nine total sites on Juniper Butte Range are NRHP-eligible.

No traditional cultural properties or architectural resources have been identified to date on Saylor Creek and Juniper Butte Ranges.

Seven NRHP-listed properties have been identified under Mountain Home AFB training airspace: the Camas and Pole Creeks Archaeological District, the Wickahoney Post Office and Stage Station, the Sheep Ranch Fortified House, Camp Three Forks, the Silver State Flour Mill, the Gold Creek Ranger Station, and the Birch Creek Ranch Historic Rural District (Mountain Home AFB 2011b).

### **3.7.3 Alternative C: Shaw AFB**

Four major surveys and ten follow-on data recovery efforts and testing studies have been completed to assess Shaw AFB's cultural resources. A total of eight historical archaeological sites have been identified within the installation boundaries; none were ultimately determined eligible for listing on the NRHP (Shaw AFB 2008).

American Indian tribes with ties to the area were consulted in the preparation of this document and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action.

All Shaw AFB facilities considered under all COAs for this alternative, their year of construction, and their NRHP status are itemized in **Table 3.7-3**. Building 611, the only architectural resource currently determined eligible for listing on the NRHP at Shaw AFB, is a World War II-era hangar. The Proposed Action includes a COA wherein Building 611 would be used to house LAS training program elements. No facilities with potential Cold War historic status are being considered for the implementation of the Proposed Action.

**Table 3.7-3. Shaw AFB – Facility NRHP Status**

Facility Name	Year Constructed	NRHP Status
Bldg. 713	1982	Not Eligible
Bldg. 721	1985	Not Eligible
Bldg. 611	1942*	Eligible
Bldg. 707	1971	Not Eligible
Bldg. 407	1953*	Not Eligible
Bldg. 114	1958*	Not Eligible
Bldg. 106	1992	Not Eligible
Bldg. 1200	1954*	Not Eligible

\*Over fifty years old; age threshold for determining NRHP status.

Of the 137 archaeological sites on the Poinsett Range, including 87 historic sites, mostly dating to the Antebellum period and Civil War era, and 50 date to before European colonization, all but one site on Poinsett Range has been evaluated for listing on the NRHP, and 36 were found eligible. The Rosemary Fire Tower Complex at Poinsett Range, built in 1934 by the Civilian Conservation Corps, was found eligible for listing and nominated for inclusion on the NRHP in 2008 (Shaw AFB 2008).

### 3.8 SOCIOECONOMIC RESOURCES (HOUSING & SCHOOLS)

As detailed in **Section 3.0**, socioeconomics comprises the basic attributes and resources associated with the human environment, particularly population and economic activity. As also described in **Section 3.0**, the availability of housing is carried forward for analysis since part of the alternative selection criteria requires that the installation has sufficient space to house AAF trainees and USAF support personnel. School capacity is also carried forward for analysis since the addition of school aged dependents may occur in the ROIs. Potential impacts associated with the redistribution of students to the local school district(s) are in terms of capacity, staffing levels, and revenue. All other components of socioeconomics described in **Section 3.0** are not carried forward for further analysis since the Proposed Action would include the relocation of approximately 81 permanent USAF personnel (with up to 180 dependents,) and approximately 45 contractors, resulting in negligible impacts to population and economic activities.

For the purpose of analyzing potential impacts associated with the Proposed Action, the rest of this section describes existing conditions regarding housing availability and school capacity. Data analyzed represent the ROIs (the installation and surrounding cities and counties) to characterize baseline conditions for housing availability and school capacity for each of the alternative locations.

#### 3.8.1 Alternative A (Preferred Alternative): Moody AFB

##### 3.8.1.1 Housing

For the housing of AAF trainees at Moody AFB, the base has a total of 836 unaccompanied housing units. However, Building 324 (with 76 units) and Building 580 (with 76 units) are currently off-line. An additional twelve units are reserved for hospitality use, leaving a total of 672 unaccompanied housing units currently being used or available for use at Moody AFB. During the site surveys at Moody AFB, personnel noted that Building 580 (with 76 units) would be available to house AAF trainees. Therefore, for the purpose of this analysis, Moody AFB has a total of 748 unaccompanied housing units.

In addition to other housing data analyzed, **Table 3.8-1** outlines the availability of unaccompanied and privatized housing at Moody AFB.

**Table 3.8-1. Moody AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units
Unaccompanied Housing	748	649	99
Privatized Housing	377	338	39

Base housing data are subject to change (Data current as of May 2014)

**Table 3.8-2** lists data regarding availability of housing in the vicinity of Moody AFB.

**Table 3.8-2. Moody AFB – Vicinity Housing**

Geography	Total Number of Housing Units	Occupied Units		Vacant Units	
		Owner Occupied	Renter Occupied	Total	Available for Rent
City of Valdosta	22,709	8,692	11,779	2,238	1,172
Lowndes County	43,921	22,448	17,299	4,174	1,774
Lanier County	4,249	2,467	1,141	641	238

Source: US Census Bureau. 2010

### 3.8.1.2 Schools

There are no schools located on Moody AFB, which is located in Lowndes County, Georgia. There are two school districts located in Lowndes County, the Lowndes County School District and the Valdosta City School District. The Valdosta City School District serves the city of Valdosta and has a total of five elementary schools, two middle schools, and one high school. Moody AFB and vicinity housing areas are served by the Lowndes County School District, which has a total of seven elementary schools, three middle schools, and one high school. There is one school district located in Lanier County. The school district has a total of one elementary school, one middle school, and one high school.

**Table 3.8-3** lists the number of students enrolled in public schools in the Valdosta City School District, Lowndes County School District, and Lanier County School District.

**Table 3.8-3. Moody AFB – Public School Enrollment**

Level of School	Number of Students		
	Valdosta City School District <sup>1</sup>	Lowndes County School District <sup>2</sup>	Lanier County School District <sup>3</sup>
Elementary School (including Kindergarten)	4,338	4,711	1,011
Middle School	1,557	2,402	390
High School	1,715	3,000	424
<b>Total</b>	<b>7,610</b>	<b>10,113</b>	<b>1,825</b>

Sources: Valdosta City Schools. 2013; Lowndes County Schools. 2013; Lanier County Schools. 2014.

<sup>1</sup> Data current as of 1 October 2013

<sup>2</sup> Data current as of 12 March 2013

<sup>3</sup> Data current as of 2014



### 3.8.2 Alternative B: Mountain Home AFB

#### 3.8.2.1 Housing

Availability of unaccompanied and privatized housing for AAF trainees and USAF personnel at Mountain Home AFB is outlined in **Table 3.8-4**.

**Table 3.8-4. Mountain Home AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units
Unaccompanied Housing	679	531	148
Privatized Housing	844	790	54

Base housing data are subject to change (Data current as of May 2014)

Data regarding the availability of housing in the vicinity of Mountain Home AFB is listed in **Table 3.8-5**.

**Table 3.8-5. Mountain Home AFB – Vicinity Area Housing**

Geography	Total Number of Housing Units	Occupied Units		Vacant Units	
		Owner Occupied	Renter Occupied	Total	Available for Rent
City of Mountain Home	6,249	3,508	2,140	601	288
Elmore County	12,162	6,185	3,955	2,022	564

Source: US Census Bureau. 2010.

#### 3.8.2.2 Schools

Mountain Home AFB and vicinity areas are served by the Mountain Home School District 193, which includes one primary school (kindergarten through 4th grade) located on the base, three elementary schools, one middle school, one junior high school, and one high school. There is also a charter school in town. **Table 3.8-6** lists the number of students enrolled in public schools in Mountain Home School District 193.

**Table 3.8-6. Mountain Home AFB – Public School Enrollment**

Level of School	Number of Students Mountain Home School District 193
Kindergarten	218
Grades 1 – 4	1,406
Grades 5 – 8	1,554
Grades 9 – 12	1,397
<b>Total</b>	<b>4,575</b>

Source: US Census Bureau. 2008.

Table represents best available data since enrollment data after 2008 is not available elsewhere.

### 3.8.3 Alternative C: Shaw AFB

#### 3.8.3.1 Housing

Regarding the housing of AAF trainees and USAF personnel, **Table 3.8-7** outlines the availability of unaccompanied and privatized housing at Shaw AFB.

**Table 3.8-7. Shaw AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units
Unaccompanied Housing	712	673	39
Privatized Housing	481	375	106

Base housing data are subject to change (Data current as of May 2014)

Data regarding the availability of housing in the vicinity of Shaw AFB is listed in **Table 3.8-8**.

**Table 3.8-8. Shaw AFB – Vicinity Area Housing**

Geography	Total Number of Housing Units	Occupied Units		Vacant Housing Units	
		Owner Occupied	Renter Occupied	Total	Available for Rent
City of Sumter	18,150	8,336	7,297	2,517	847
Sumter County	46,011	27,014	13,384	5,613	1,556

Source: US Census Bureau. 2010.

#### 3.8.3.2 Schools

Shaw AFB and vicinity areas are served by the Sumter School District, which encompasses 16 elementary schools (including a primary school located just outside the installation gate), seven middle schools, three high schools. **Table 3.8-9** lists the number of students enrolled in public schools in the Sumter School District.

**Table 3.8-9. Shaw AFB – Public School Enrollment**

Level of School	Number of Students Sumter School District <sup>1,2</sup>
Kindergarten	1,319
Grades 1 – 4	5,060
Grades 5 – 8	5,329
Grades 9 – 12	5,233
<b>Total</b>	<b>16,941</b>

Source: US Census Bureau. 2008.

<sup>1</sup> Table represents best available data since enrollment data after 2008 is not available elsewhere.

<sup>2</sup> Census data provided in table was originally reported by Sumter School Districts Two and 17. In 2011, these two districts were consolidated into the Sumter School District. Data provided in table reflects Census data for the two districts as a single district by adding total enrollments for the two districts.

### 3.9 INFRASTRUCTURE/UTILITIES

Infrastructure and utilities include those services that provide amenities such as power supply, water supply, sewer and waste water systems, storm water systems, liquid fuel supply, solid waste management, communications, and transportation systems. Infrastructure is human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area.

The infrastructure components discussed in this section include utilities such as liquid fuel supply, and communications. Components with minimal to no impacts were identified through a preliminary screening process based on the scope of the Proposed Action. The following components of this resource area would not be affected by the Proposed Action, regardless of the alternative selected:

- ◆ **Infrastructure/Utilities – Power Supply:** The Proposed Action would not make any modifications to the existing electrical system for any alternative selected. While the Proposed Action would include a permanent party of approximately 350 persons, this represents less than a 5 percent increase in personnel and would not likely affect the power supply to any installation. Therefore, implementation of the Proposed Action would not result in impacts to power supply.
- ◆ **Infrastructure/Utilities – Water Supply:** The Proposed Action does not include any changes to the water supply system for any alternative selected. The Proposed Action would include a permanent party of approximately 350 persons; however, since this represents less than a 5 percent increase in personnel, it would not likely affect the water supply at any installation. Therefore, no impacts to water supply would result from implementation of this Proposed Action.
- ◆ **Infrastructure/Utilities – Wastewater:** The Proposed Action does not include modifications to the wastewater system at any of the installations. Although the Proposed Action would include a permanent party of approximately 350 persons, this represents an increase of less than 5 percent and would not likely affect wastewater services. Therefore, no impacts to wastewater would result from this Proposed Action.
- ◆ **Infrastructure/Utilities – Storm Water Drainage:** No changes to the storm water drainage system at any installation would occur as a result of this Proposed Action; therefore, there would be no impacts to storm water drainage.
- ◆ **Infrastructure/Utilities – Solid Waste Management:** The Proposed Action does not include any construction, only minor interior modifications to existing buildings. Although the Proposed Action would include a permanent party of approximately 350 persons, this represents an increase of less than 5 percent and would not likely affect solid waste management services. Therefore, there would not be a significant increase in solid waste, and subsequently no impacts on solid waste management, from implementation of this Proposed Action.
- ◆ **Infrastructure/Utilities – Transportation:** Changes to transportation systems, both on- and off-base, are not included in this Proposed Action. Further, the personnel increase associated with this Proposed Action is negligible compared to the number of existing personnel for each alternative. Therefore, no impacts to transportation from the Proposed Action would occur.

The ROI for the infrastructure/utilities resource is defined as the installation, and includes the services provided by off-installation providers.

### **3.9.1 Alternative A (Preferred Alternative): Moody AFB**

#### **3.9.1.1 Liquid Fuel Supply**

Moody AFB is supplied with Jet-A fuel brought onto the installation by commercial trucks and accessed on-base via fillstands. The above ground fuel system consists of four tanks that have a total storage capacity of 1,279,795 gallons of fuel (Santicola 2014).

#### **3.9.1.2 Communications Systems**

Moody AFB has inside plant and outside plant communications infrastructure that provides the base with data communications, information transfer, telephone switching, and radio and security systems, as well as range communications and frequency requirements. The current communications infrastructure at Moody AFB has the capacity for expansion (Moody 2014).

### **3.9.2 Alternative B: Mountain Home AFB**

#### **3.9.2.1 Liquid Fuel Supply**

All petroleum handled at Mountain Home AFB is Jet-A fuel, which is stored at the Bulk Fuel Storage Area. Mountain Home AFB has a bulk fuel storage capacity of 4.5 million gallons. A fuel pipeline enters Mountain Home AFB at the northeastern end of the installation and traverses in a southwesterly direction towards the runway. This pipeline originates from the City of Mountain Home, and is not owned by the base until the pipeline enters the Bulk Fuel Storage Area by the flightline (Mountain Home AFB 2011a).

#### **3.9.2.2 Communications Systems**

Communications systems at Mountain Home AFB include data communications, long-haul communications, information transfer, telephone switching, and radio and security systems. The installation maintains a high-capacity digital data network using single mode fiber optics to provide secure networking, electronic messaging and other services. The current telephone switching system is robust and fully supports switching needs for mission changes, dial-up local area networks, Voice-over-Internet-Protocol and additional programs and has ample trunk expansion capacity (Walsh 2014).

### **3.9.3 Alternative C: Shaw AFB**

#### **3.9.3.1 Liquid Fuel Supply**

The available fuel at Shaw AFB is Jet-A Fuel, which is stored at the Bulk Fuel Storage Area on the south side of the base. The Bulk Fuel Storage Area has the capacity to store 1.5 million gallons of Jet-A fuel. All fuel supplied to Shaw AFB is brought in from Charleston, South Carolina via commercial truck or rail and can be accessed at fillstands near the Bulk Fuel Storage Area (Lee 2014).

#### **3.9.3.2 Communications Systems**

Communications systems at Shaw AFB include data communications, long-haul communications, information transfer, telephone switching, and radio and security systems. The installation maintains a high-capacity digital data network using mode and multimode fiber optics to provide secure networking, electronic messaging and other services. The current telephone switching system fully supports switching

needs for mission changes, dial-up local area networks and additional programs and has ample trunk expansion capacity (Shaw AFB 2010).

### **3.10 CLIMATE CHANGE**

In addition to presenting estimates of GHG emissions that would result from A-29 operations, the following considers how climate change could impact the Proposed Action and what adaptation strategies, if any, would be required to respond to these potential future conditions.

#### **3.10.1 Alternative A (Preferred Alternative): Moody AFB**

For Moody AFB, the main effect of climate change to consider is increased temperatures, as documented in Global Climate Change Impacts in the United States (USGCRP 2014). This report predicts that in the future, higher temperatures in the Southeast region surrounding Moody AFB will increase droughts and decrease water availability. However, exacerbation of these conditions in the future would increase the cost of proposed operations at Moody AFB and would impede operations during extreme events. Minimal additional measures would be needed to mitigate these occurrences since the A-29 operation is temporary and would end in 2018.

#### **3.10.2 Alternative B: Mountain Home AFB**

For Mountain Home AFB, the main effect of climate change to consider is increased temperatures, as documented in Global Climate Change Impacts in the United States (USGCRP 2014). This report predicts that in the future, higher temperatures in the Great Plains region surrounding Mountain Home AFB will experience the greatest projected increase in temperature. However, exacerbation of these conditions in the future would increase the cost of proposed operations at Mountain Home AFB and would impede operations during extreme events. However, minimal additional measures would be needed to mitigate these occurrences since the A-29 operation is temporary and would end in 2018.

#### **3.10.3 Alternative C: Shaw AFB**

For Shaw AFB, the main effect of climate change to consider is increased temperatures, as documented in Global Climate Change Impacts in the United States (USGCRP 2014). This report predicts that in the future, higher temperatures in the Southeast region surrounding Shaw AFB will increase droughts and decrease water availability. However, exacerbation of these conditions in the future would increase the cost of proposed operations at Shaw AFB and would impede operations during extreme events. However, minimal additional measures would be needed to mitigate these occurrences since the A-29 operation is temporary and would end in 2018.

## 4.0 ENVIRONMENTAL CONSEQUENCES

### 4.1 AIRSPACE AND RANGE MANAGEMENT

Adverse impacts to airspace and range management depend on the degree to which the proposed aircraft and their operations would affect the structure, use, or management of the airspace or range environment. Significant impacts could result if the Proposed Action would: 1) impose major restrictions on air commerce opportunities; 2) significantly limit airspace access to a large number of users; or 3) require modifications to ATC systems.

#### 4.1.1 Alternative A (Preferred Alternative): Moody AFB

##### 4.1.1.1 Airspace Management

Site Survey Reports from Moody AFB state that there is suitable airspace and availability for increased use (Moody AFB 2014). **Table 4.1-1** presents the increase in annual sorties within Moody AFB's airspace that would be associated with the beddown of the A-29 LAS training mission. The Proposed Action would operate in Moody 1 MOA, Grand Bay Range, and Townsend Range.

**Table 4.1-1. Moody AFB – Sortie Annual Increase**

Airspace Unit		Baseline Sorties	A-29 Sorties	Total Sorties	Total Percent Change
Coastal 1 East MOA		1,078	0	1,078	0%
Coastal 1 West MOA		1,078	0	1,078	0%
Moody 1 MOA		1,016	1,221	2,237	54.6%
Moody 2 MOA	Hog North	1,547	0	1,547	0%
	Hog South	1,560	0	1,560	0%
Moody 3 MOA		68	0	68	0%
Townsend Range		267	120	387	31%
Grand Bay Range		5,906	480	6,386	7.5%

Source: FAA 2013

The addition of sorties in Moody 1 MOA, Grand Bay Range, and Townsend Range represent a 54.6 percent increase, 7.5 percent increase, and 31 percent increase, respectively. Moody AFB has ample capacity to accommodate the increase in sorties, as shown in **Table 4.1-2**.

**Table 4.1-2. Moody AFB – Airspace Capacity**

Airspace Unit	Annual Hours Available for Use	Used Hours	Unused Hours	Available Airspace Time
Coastal 1 East MOA	8,760	482.33	8,277.67	94.5%
Coastal 1 West MOA	8,760	482.33	8,277.67	94.5%
Moody 1 MOA	8,760	1,520	7,240	82.6%
Moody 2 North MOA	8,760	2,320	6,440	73.5%
Moody 2 South MOA	8,760	2,340	6,420	73.3%
Moody 3 MOA	8,760	102	8,658	98.8%
Townsend Range	8,760	415.2	8,344.8	95.3%
Grand Bay Range	8,760	2,936	5,824	66.5%

Source: FAA 2013

#### 4.1.1.2 Range Management

Site Survey Reports from Moody AFB state that both tactical and conventional training ranges are available within 120 NM from the base and are able to accommodate the training munitions that will be used by the A-29s (Moody AFB 2014).

A-29 training operations would be consistent with operations assessed in previous environmental analyses for these ranges. Documents analyzing Grand Bay Range include the *EA for Grand Bay Range, Bemiss Field and Explosive Ordnance Disposal Range Operations* completed in 2013, the *EA Addressing the Expansion of Sortie-Operations* completed in 2012, and the *EA for Lower Pattern Altitude* completed in 2012. Analysis for Townsend Range includes the *EIS for the Modernization and Expansion of Townsend Bombing Range* completed in 2014, and the *EA for the A/OA-10 Beddown* completed in 2006. All operations at the ranges would be in compliance with AFI 13-212, *Range Planning and Operations*.

The added munitions expended at Grand Bay Range and Townsend Range as a result of the Proposed Action is shown in **Table 4.1-3** and **Table 4.1-4**, respectively.

**Table 4.1-3. Grand Bay Range – Estimated Annual Munitions**

Munitions	FY13 Use	A-29 Proposed Use	Total
BDU-33	4,656	806	5,462
2.75" Rockets	764	536	1,300
BDU-50/GBU-12	158	38	196
.50 Caliber Ammunition	73,870	13,440	87,310

Source: Ferrier 2014



**Table 4.1-4. Townsend Range – Estimated Annual Munitions**

Munitions	FY13 Use	A-29 Proposed Use	Total
BDU-33	1,165	202	1,367
2.75" Rockets	179	136	315
BDU-50/GBU-12 <sup>1</sup>	90	10	100
.50 Caliber Ammunition <sup>2</sup>	0	3,360	3,360

Source: Ferrier 2014

<sup>1</sup> GBU-12s are not currently accepted at Townsend Range.<sup>2</sup> While no .50-cal activity is listed for FY13, .50-cal ammunition is accepted at Townsend Range and has been used in the past.

#### 4.1.1.3 Moody AFB Conclusion

Implementing the Proposed Action at Moody AFB would not require additional airspace or any changes to the current lateral or vertical configuration of the MOAs, ATCAAs, or Restricted Areas. All airspace activity associated with the A-29 training mission would occur between 7,000 and 22,000 ft MSL and fly in accordance with AFI 11-202 Vol 3 *General Flight Rules*. Airspace activity within the MTRs will occur at elevations of 500 ft AGL and above. The increases in airspace use at Moody AFB would not affect civilian/commercial air traffic along the adjacent jet routes. FY13 munitions expenditures were historically low due to fiscal constraints. Although there would be an increase in munitions expended, the type and quantities of munitions that would be delivered under the Proposed Action would be consistent with those historically delivered to Grand Bay and Townsend Ranges. Since the A-29 training mission would not alter the use of airspace or ranges, and Moody AFB is capable of handling the sortie and munitions increases that would result from the Proposed Action, there would be no significant impacts to airspace and range management at Moody AFB.

#### 4.1.2 Alternative B: Mountain Home AFB

##### 4.1.2.1 Airspace Management

Site Survey Reports for Mountain Home AFB state that there is suitable airspace and availability for increased use (Mountain Home AFB 2014). **Table 4.1-5** shows the increase in annual sorties that would occur in Mountain Home's airspace resulting from the A-29 LAS Beddown. The Proposed Action would operate in Saddle A MOA, Saddle B MOA, and Saylor Creek Range.

**Table 4.1-5. Mountain Home AFB – Sortie Annual Increase**

Airspace Unit	Baseline Sorties	A-29 Sorties	Total Sorties	Total Percent Change
Saddle A MOA	4,566	488	5,054	9.7%
Saddle B MOA	4,566	733	5,299	13.8%
Paradise North MOA	5,898	0	5,898	0%
Paradise South MOA	5,611	0	5,611	0%
Owyhee North MOA	7,152	0	7,152	0%
Owyhee South MOA	5,630	0	5,630	0%
Jarbridge North MOA	8,033	0	8,033	0%

Airspace Unit	Baseline Sorties	A-29 Sorties	Total Sorties	Total Percent Change
Jarbridge South MOA	5,653	0	5,653	0%
Saylor Creek Range	8,044	600	8,644	6.9%
Juniper Butte Range	8,037	0	8,037	0%

Source: FAA 2013

The addition of sorties in Saddle A MOA, Saddle B MOA, and Saylor Creek Range represents a 9.7 percent increase, 13.8 percent increase, and 6.9 percent increase, respectively. Mountain Home AFB's airspace has ample capacity to accommodate the increase in operations, as shown in **Table 4.1-6**.

**Table 4.1-6. Mountain Home AFB – Airspace Capacity**

Airspace Unit	Annual Hours Available for Use	Used Hours	Unused Hours	Available Airspace Time
Saddle A MOA	8,760	1,081	7,679	87.7%
Saddle B MOA	8,760	1,081	7,679	87.7%
Paradise North MOA	8,760	2,801	5,959	68.0%
Paradise South MOA	8,760	2,804	5,956	67.9%
Owyhee North MOA	8,760	2,993	5,767	65.8%
Owyhee South MOA	8,760	2,798	5,962	68.1%
Jarbridge North MOA	8,760	2,984	5,776	65.9%
Jarbridge South MOA	8,760	2,798	5,962	68.1%
Saylor Creek Range	8,760	2,993	5,767	65.8%
Juniper Butte Range	8,760	2,989	5,771	65.9%

Source: FAA 2013

#### 4.1.2.2 Range Management

Site Survey Reports from Mountain Home AFB state that both tactical and conventional training ranges are available within 120 NM from the base and are able to accommodate the training munitions that will be used by the A-29s (Mountain Home AFB 2014).

A-29 training operations would be consistent with operations assessed in previous environmental analyses for this range, such as the *EIS for Enhanced Training in Idaho* completed in 1998, the *EA for Employment of the 2.75-Inch Rocket at Saylor Creek Range* completed in 2007, the *EA for Airspace Changes for Paradise Military Operations Area* completed in 2010, and the *EA for Explosive Ordnance Disposal Detonation Site on Juniper Butte Range* completed in 2012. All operations at the ranges would be in compliance with AFI 13-212, *Range Planning and Operations*.

The added munitions expended at Saylor Creek Range and Juniper Butte Range as a result of the Proposed Action is shown in **Table 4.1-7** and **Table 4.1-8**, respectively.

**Table 4.1-7. Saylor Creek Range – Estimated Annual Munitions**

Munitions	FY13 Use	A-29 Proposed Use	Total
BDU-33	4,345	1,008	5,353
2.75" Rockets	889	672	1,561
BDU-50/GBU-12	276	48	324
.50 Caliber Ammunition <sup>1</sup>	0	16,800	16,800

Source: Ferrier 2014

<sup>1</sup> While no .50-cal activity is listed for FY13, .50-cal ammunition is accepted at Saylor Creek Range and has been used in the past.

**Table 4.1-8. Juniper Butte Range – Estimated Annual Munitions**

Munitions <sup>1</sup>	FY13 Use	A-29 Proposed Use	Total
BDU-33	1,146	0	1,146
2.75" Rockets	--	--	--
BDU-50/GBU-12	--	--	--
.50 Caliber Ammunition	--	--	--

Source: Ferrier 2014

<sup>1</sup> BDU-33 is the only munition accepted on Juniper Butte Range that is proposed for use by the A-29s.

#### 4.1.2.3 Mountain Home AFB Conclusion

Implementing the Proposed Action at Mountain Home AFB would not require additional airspace or any changes to the current lateral or vertical configuration of the MOAs, ATCCAs, or Restricted Areas. All airspace activity associated with the A-29 training mission would occur between 7,000 and 22,000 ft MSL and fly in accordance with AFI 11-202 Vol 3, *General Flight Rules*. Airspace activity within the MTRs will occur at elevations of 500 ft AGL and above. The increases in airspace use at Mountain Home AFB would not affect civilian/commercial air traffic along the adjacent jet routes. FY13 munitions expenditures were historically low due to fiscal constraints. Although there would be an increase in munitions expended, the type and quantities of munitions that would be delivered under the Proposed Action would be consistent with those historically delivered to Saylor Creek Range. Since the A-29 training mission would not alter the use of airspace or ranges, and Mountain Home AFB is capable of handling the sortie and munitions increases from the Proposed Action, there would be no significant impacts to airspace and range management at Mountain Home AFB.

#### 4.1.3 Alternative C: Shaw AFB

##### 4.1.3.1 Airspace Management

Site Survey Reports from Shaw AFB state that there is suitable airspace and availability for increased use (Shaw AFB 2014). **Table 4.1-9** outlines the increase in annual sorties that would occur in Shaw AFB's airspace resulting from the A-29 LAS Beddown. The Proposed Action would operate in Gamecock A MOA, Robroy LOA, Poinsett Range, and Townsend Range.

**Table 4.1-9. Shaw AFB – Sortie Annual Increase**

Airspace Unit	Baseline Sorties	A-29 Sorties	Total Sorties	Total Percent Change
Gamecock A MOA	4,218	733	4,951	14.8%
Gamecock B MOA	50	0	50	0%
Gamecock C MOA	2,765	0	2,765	0%
Gamecock D MOA	2,752	0	2,752	0%
Robroy LOA <sup>1</sup>	N/A	488	N/A	N/A
Poinsett MOA	753	0	753	0%
Gamecock I MOA	1,253	0	1,253	0%
Poinsett Range	753	480	1,233	38.9%
Townsend Range	267	120	387	31%

Source: FAA 2013

<sup>1</sup>Sortie data not collected for LOA airspace.

The addition of sorties in Gamecock A MOA, Poinsett Range, and Townsend Range represent a 14.8 percent increase, 38.9 percent increase, and a 31 percent increase respectively. Shaw AFB's airspace has ample capacity to accommodate the increase in operations associated with the addition of the A-29s, as shown in **Table 4.1-10**.

**Table 4.1-10. Shaw AFB – Airspace Capacity**

Airspace Unit	Annual Hours Available for Use	Used Hours	Unused Hours	Available Airspace Time
Gamecock Alpha MOA	8,760	1,684	7,076	80.8%
Gamecock Bravo MOA	8,760	16	8,744	99.8%
Gamecock Charlie MOA	8,760	1,260	7,500	85.6%
Gamecock Delta MOA	8,760	1,290	7,470	85.3%
Robroy LOA <sup>1</sup>	N/A	N/A	N/A	N/A
Poinsett MOA	8,760	236	8,524	97.3%
Gamecock India MOA	8,760	400	8,360	95.4%
Poinsett Range	8,760	236	8,524	97.3%
Townsend Range	8,760	415.2	8,344.8	95.3%

Source: FAA 2013

<sup>1</sup>Usage hours data not collected for LOA airspace.

#### 4.1.3.2 Range Management

Site Survey Reports from Shaw AFB state that both tactical and conventional training ranges are available within 120 NM from the base and are able to accommodate the training munitions that will be used by the A-29s (Shaw AFB 2014).

A-29 training operations would be consistent with operations assessed in previous environmental analyses for this range, such as *EA for Poinsett Range* completed in 1994 and the *Supplemental EA for Poinsett Range* completed in 1996. All operations at the ranges would be in compliance with AFI 13-212, *Range Planning and Operations*.

The annual increase in munitions expended at Poinsett Range and Townsend Range as a result of the Proposed Action is shown in **Table 4.1-11** (below) and **Table 4.1-4** (see **Section 4.1.1.2**).

**Table 4.1-11. Poinsett Range – Estimated Annual Munitions**

Munitions	FY13 Use	A-29 Proposed Use	Total
BDU-33	435	806	1,241
2.75" Rockets <sup>1</sup>	0	536	536
BDU-50/GBU-12	180	38	218
.50 Caliber Ammunition	65	13,440	13,505

Source: Ferrier 2014

<sup>1</sup> While no 2.75" rocket activity is listed for FY13, 2.75" rockets are accepted at Saylor Creek Range and have been used in the past.

#### 4.1.3.1 Shaw AFB Conclusion

Bedding down the A-29 training mission at Shaw AFB would not require additional airspace or any changes to the current lateral or vertical configuration of the MOAs, ATCCAs, or Restricted Areas. All airspace activity associated with the A-29 training mission would occur between 7,000 and 22,000 ft MSL and fly in accordance with AFI 11-202 Vol 3 *General Flight Rules*. Airspace activity within the MTRs will occur at elevations of 500 ft AGL and above. The increases in airspace use at Shaw AFB would not affect civilian/commercial air traffic along the adjacent jet routes. FY13 munitions expenditures were historically low due to fiscal constraints. Although there would be an increase in munitions expended, the type and quantities of munitions that would be delivered under the Proposed Action would be consistent with those historically delivered to Poinsett and Townsend Ranges. Since the A-29 training mission would not alter the use of airspace or ranges, and Shaw AFB is capable of handling the sortie and munitions increases from the Proposed Action, there would be no significant impacts to airspace and range management at Shaw AFB.

#### 4.1.4 Alternative D: No-Action Alternative

Under the No-Action Alternative, the A-29 training mission would not beddown at any of the analyzed installations, resulting in no changes to baseline operations at Moody AFB, Mountain Home AFB, or Shaw AFB and, therefore, no impacts to airspace or range management.

## 4.2 NOISE

Noise impact analyses typically evaluate potential changes to the existing acoustic environment that would result from implementation of a proposed action. Potential changes in the acoustic environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to noise levels or reduce the ambient sound level) or adverse (i.e., if they result in increased sound exposure or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively and quantitatively for the alternatives considered. Residential areas, houses of worship, schools, daycares and hospitals are considered noise-sensitive (USAF 1984).

### **Methodology**

Two different analysis methodologies were used to assess potential noise impacts for airfield and airspace activities. For airfield noise exposure at and around military air bases for operations generated by military aircraft and engine run-up activities, the DOD NOISEMAP suite of computer programs was used (Czech and Plotkin 1998; Page et al, 2012; Wasmer and Maunsell 2006a; Wasmer and Maunsell 2006b). The core computational program is called “NMAP,” Version 7.2. The Rotorcraft Noise Model (RNM) component of the suite was not utilized for this study.

The noise environment under airspace was modeled using the software program *MOA and Range NOISEMAP* (MR\_NMAP). This computer program predicts the levels associated with aircraft operations that occur sporadically in military airspace.

All A-29 flying activities would be subsonic; therefore sonic booms would not occur as a result of the proposed action.

The A-29 Super Tucano is not in the DoD inventory. Because of this, it is not directly available in Noisemap, the DoD-approved noise model for NEPA and AICUZ noise analyses. Acoustic data for modeling the A-29 is unavailable. CEQ guidance §1502.22 allows for reasonable estimates for incomplete or unavailable data. The T-6 Texan II aircraft is in the USAF inventory, available in Noisemap and similar to the A-29. Therefore the T-6 was used as a surrogate. The A-29 has the Pratt & Whitney PT6A-68C engine with 5-blade prop; whereas, the T-6 has the PT6A-68 engine with 4-blade prop which is in the same family of engines but slightly less powerful. In general, a more powerful engine would be louder; however, increasing the number of blades on the prop would reduce the noise. Because the noise level difference between the A-29 and T-6 is unknown the A-29 was conservatively (over-estimated) modeled as the T-6 plus 3 dB.

### **4.2.1 Alternative A (Preferred Alternative): Moody AFB**

#### **4.2.1.1 Moody AFB Airfield Noise**

Comparison of single-event noise levels for A-10s based at Moody AFB and the A-29 are shown in **Table 4.2-1** for typical local weather conditions. The Proposed Action would increase airfield operations by 46 percent from 35,290 to 51,490 annual operations, as shown in **Table 3.2-1**. The resulting annual average day DNL for the Proposed Action at Moody AFB is shown in **Figure 4.2-1** and DNL comparison map to baseline conditions shown in **Figure 4.2-2**. Acreage and population counts for areas under the Proposed Action DNL are listed in **Table 4.2-2**. The noise contours from airfield operations would expand slightly. Increases in the DNL would be less than 1 dB and would not likely be discernable.

**Table 4.2-1. Comparison of Single-Event Noise Levels at Moody AFB**

Condition <sup>1</sup>	Based A-10 <sup>2,3</sup>				A-29 <sup>3,4</sup>			
	SEL (dBA)	Lmax (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	Lmax (dBA)	Power (%Torque)	Speed (kts)
Military Power Take-Off (1,000 ft AGL)	100	94	100%	200	95	81	100%	200
Arrival <sup>3</sup> (non-break, through 1,000 ft AGL)	93	90	87%	190	85	79	50%	110
Overhead Break (downwind leg, 1,800 ft MSL / 1,600 ft AGL)	88	83	87%	160	80	72	50%	120

Moody AFB nominal elevation = 233 ft MSL; weather 68°F, 62% Relative Humidity;

SEL = Sound Exposure Level; Lmax = Maximum (instantaneous) Sound Level; dBA = A-weighted Decibel;

NC = Engine core revolutions per minute; kts = knots; ft = feet;

Notes: SEL and Lmax values rounded to the nearest decibel.

<sup>1</sup> SEL and Lmax values are for level flights directly overhead at the given altitude

<sup>2</sup> Modeled A-10 with TF34-GE-100 engine.

<sup>3</sup> Values reflect gear-up conditions.

<sup>4</sup> A-29 Modeled as T-6 (PT6A-68 engine) + 3dB

**Table 4.2-2. Moody AFB Proposed Acreage and Population Counts**

DNL	Population <sup>1,2,3</sup>		Acreage <sup>3</sup>					
			Proposed			Change		
	Proposed	Change	On-Base	Off-Base	Total	On-Base	Off-Base	Total
65-70	41	3	1,067	636	1,703	92	52	144
70-75	4	1	821	69	890	83	20	102
75-80	0	0	291	0	291	18	0	18
80-85	0	0	94	0	94	15	0	15
85+	0	0	31	0	31	0	0	0
<b>Total</b>	<b>46</b>	<b>5</b>	<b>2,303</b>	<b>705</b>	<b>3,007</b>	<b>208</b>	<b>71</b>	<b>280</b>

<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

<sup>3</sup> Values rounded to nearest whole number and may not sum to total



**Figure 4.2-1. Moody AFB Proposed DNL Noise Contour Map**

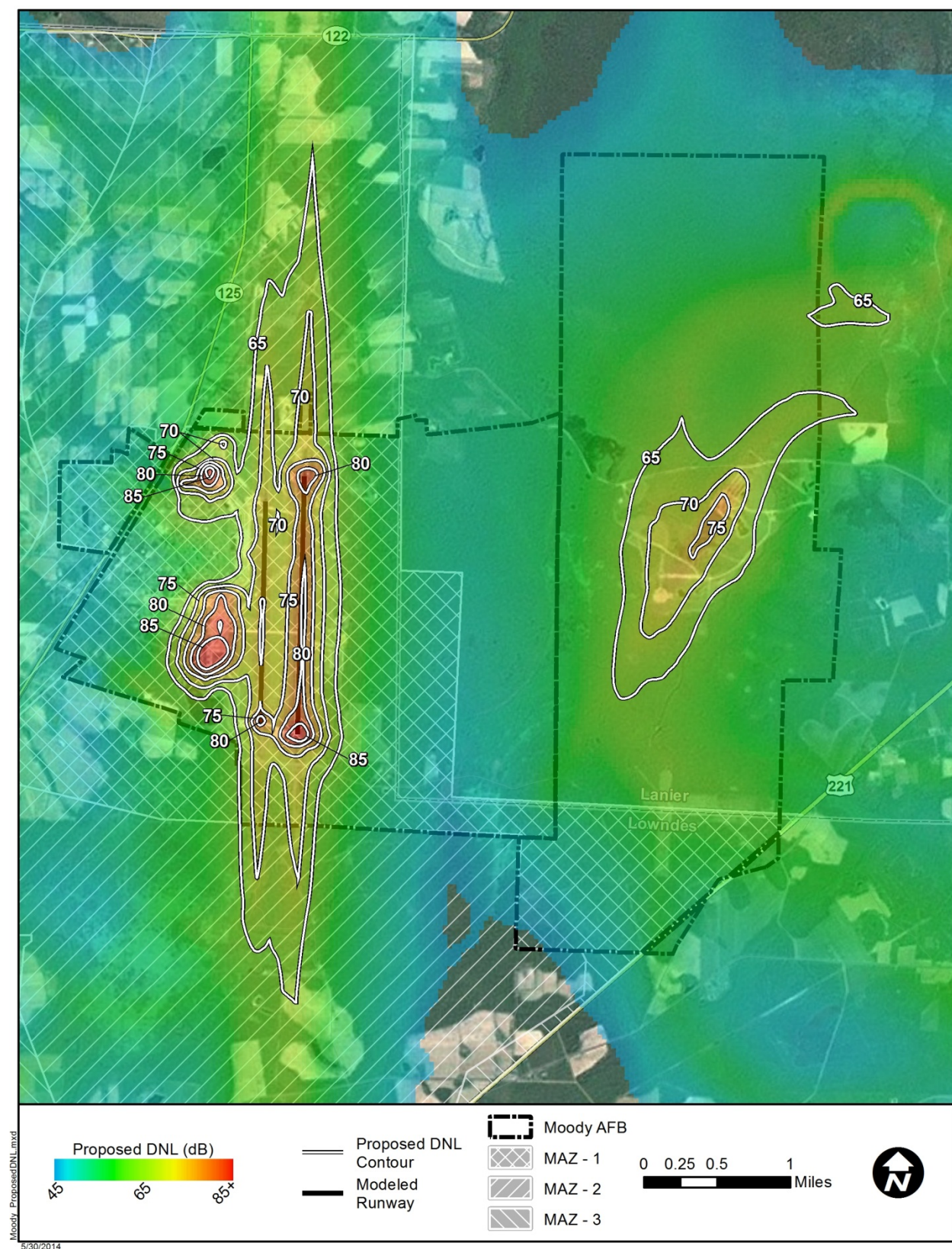
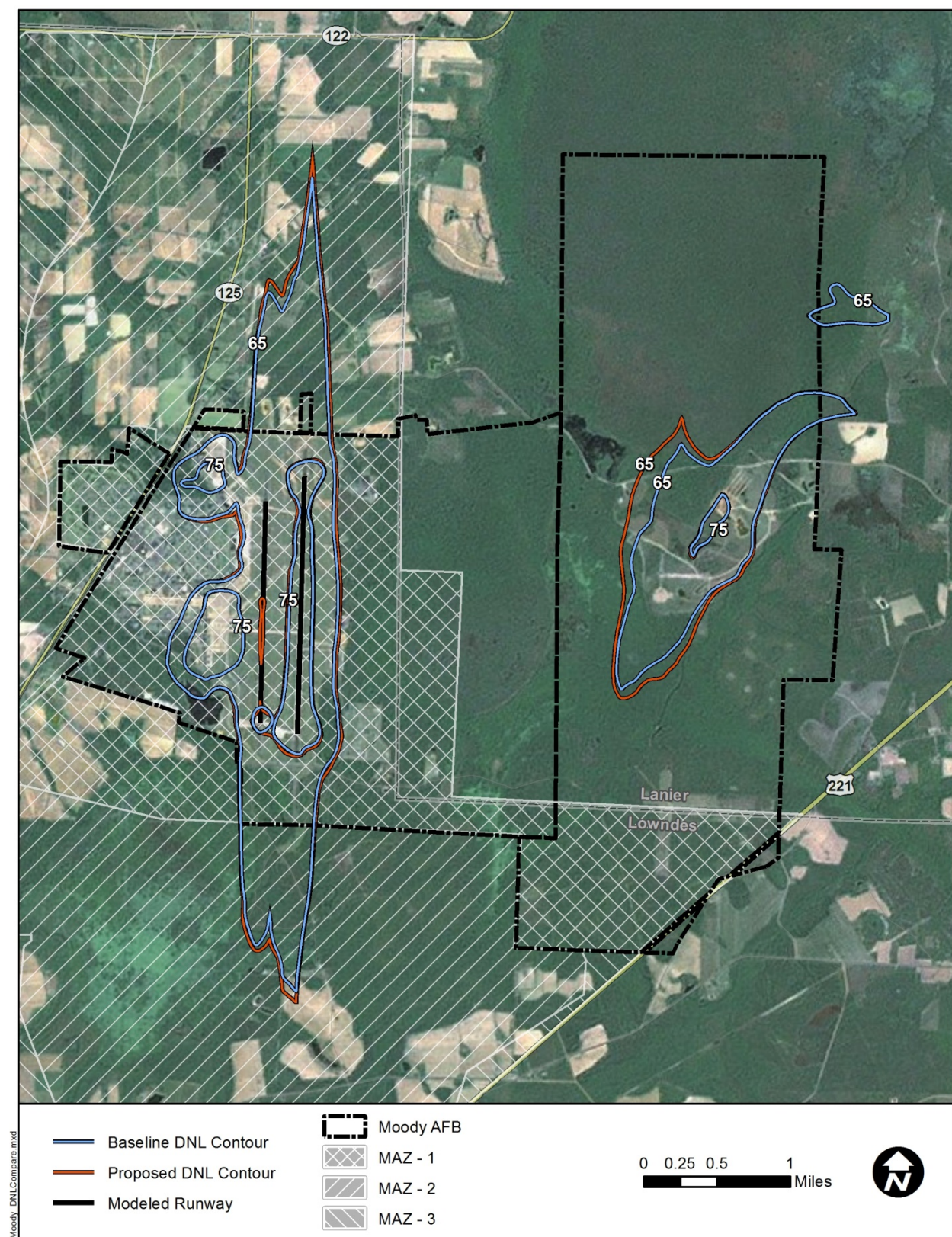




Figure 4.2-2. Moody AFB Comparison DNL Noise Contour Map



#### 4.2.1.2 Moody AFB Airspace Noise

**MTRs:** The airspace within the ROI is currently in use by A-10, F-18 and other military jets. Intermittent aircraft overflights in these areas occur presently. Single-event noise levels for direct overflight of the A-29 along MTRs and in the ranges are shown in **Table 4.2-3** for typical local weather conditions.

**Table 4.2-3. Single-Event Noise Levels Along MTR's near Moody AFB**

Altitude (ft AGL) <sup>1</sup>	A-29 90% Torque, 240 kts		A-10A 6200 NF, 300 kts		F-18E/F High-speed 92% N2, 500 kts		F-18E/F Low-speed 83.3% NC, 370 kts	
	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>
500	97	88	103	100	116	114	107	104
1,000	91	81	96	92	110	107	102	97
2,000	86	73	88	82	103	98	95	89
5,000	78	63	76	68	91	84	84	75

Moody AFB nominal elevation = 233 ft MSL;

Weather 68°F, 62% Relative Humidity, Pressure 29.78 inHg;

<sup>1</sup> Direct over-flight

<sup>2</sup> Values rounded to nearest decibel

It can be seen in **Table 4.2-3** that single event noise levels would be much lower than aircraft currently using the MTRs. Up to 50 A-29 annual training sorties would fly along the MTRs with approximately 24 occurring in the busiest month. Each sortie would utilize one and perhaps portions of a second MTR. Therefore use of the MTRs would be infrequent. While the A-29 may be quieter relative to other military jets currently using the airspace, single A-29 events may be more perceptible due to the tonality of its prop engine compared to broadband noise for jets and slightly longer noise events because of slower airspeed. Potential impacts to the acoustic environment would not be significant.

**MOAs and Restricted Airspace:** Noise exposure under MOAs and Restricted airspace is shown in **Table 4.2-4**. Increases in the L<sub>dnmr</sub> would be less than 1 dB and would not likely be discernable.

**Table 4.2-4. Moody AFB Proposed Busy Month L<sub>dnmr</sub>**

Airspace	L <sub>dnmr</sub> (dBA) <sup>1</sup>	Change
Moody 1 MOA <sup>2</sup>	< 45	< 1
Moody 2 North MOA	55	< 1
Moody 2 South MOA	54	< 1
Moody 3 MOA	< 45	< 1
Live Oak MOA	< 45	< 1
Bulldog A MOA	< 45	< 1
Bulldog B MOA	< 45	< 1
Coastal 1 East MOA	51	< 1

Airspace	L <sub>dnmr</sub> (dBA) <sup>1</sup>	Change
Coastal 1 West MOA	53	< 1
Grand Bay Range (R-3008A)	70	< 1
Grand Bay Range (R-3008B)	64	< 1
Grand Bay Range (R-3008C-D) <sup>3</sup>	49	< 1
Townsend Range (R-3007) <sup>4</sup>	< 45	< 1

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> Moody 1 MOA overlaps Moody AFB

<sup>3</sup> The noise levels shown for Grand Bay Range are for R-3008C and D combined.

<sup>4</sup> The noise levels shown for Townsend Range are for R-3007A, B, C, and D combined.

#### 4.2.1.3 Moody AFB Conclusion

At Moody AFB the Proposed Action would increase military aircraft operations at an active air base and in airspace which is currently used by military jets. In general, the vicinity of Moody AFB is rural and sparsely populated. Proposed activity would follow all flight rules and regulations including avoidance of noise sensitive areas. Increases in the DNL (and L<sub>dnmr</sub>) would be less than 1 dB. Potential impacts to the acoustic environment would not be significant.

### 4.2.2 Alternative B: Mountain Home AFB

#### 4.2.2.1 Mountain Home AFB Airfield Noise

Comparison of single-event noise levels for based F-15Es at Mountain Home AFB and the A-29 are shown in **Table 4.2-5** for typical local weather conditions. The Proposed Action would increase airfield operations by 53 percent from 30,425 to 46,625 annual operations, as shown in **Table 3.2-1**. The resulting annual average day DNL for the Proposed Action at Mountain Home AFB is shown in **Figure 4.2-3** and DNL comparison map to baseline conditions shown in **Figure 4.2-4**. Acreage and population counts for areas under the Proposed Action DNL are listed in **Table 4.2-6**. The noise contours from airfield operations would expand slightly. Increases in the DNL would be less than 1 dB and would not likely be discernable.

**Table 4.2-5. Comparison of Single-Event Noise Levels at Mountain Home AFB**

Condition <sup>1</sup>	Based F-15E <sup>2,4</sup>				A-29 <sup>5</sup>			
	SEL (dBA)	Lmax (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	Lmax (dBA)	Power (%Torque)	Speed (kts)
Afterburner Take-Off <sup>3</sup> (1,000 ft AGL)	116	108	92%	300	-	-	-	-
Military Power Take-Off (1,000 ft AGL)	116	108	92%	300	95	81	100%	200
Arrival <sup>4</sup> (non-break, through 1,000 ft AGL)	104	95	83%	155	85	78	50%	110
Overhead Break (downwind leg, 1,800 ft AGL)	80	73	72%	200	80	72	50%	120

Mountain Home AFB nominal elevation = 2,996 ft MSL; weather 55°F, 47% Relative Humidity;

SEL = Sound Exposure Level; Lmax = Maximum (instantaneous) Sound Level; dBA = A-weighted Decibel;

NC = Engine core revolutions per minute; kts = knots; ft = feet;

Notes: Notes: SEL and Lmax values rounded to the nearest decibel.

<sup>1</sup> SEL and Lmax values are for level flights directly overhead at the given altitude.

<sup>2</sup> Modeled F-15E. with F110-PW-229 engine.

<sup>3</sup> Power reduced from Afterburner to military power prior to reaching 1,000 ft AGL

<sup>4</sup> Values reflect gear-up conditions.

<sup>5</sup> A-29 Modeled as T-6 (PT6A-68 engine) + 3dB

**Table 4.2-6. Mountain Home AFB Proposed Acreage and Population Counts**

DNL	Population <sup>1,2,3</sup>		Acreage <sup>3</sup>					
			Proposed			Change		
	Proposed	Change	On-Base	Off-Base	Total	On-Base	Off-Base	Total
65-70	5	0	1,155	8,948	10,103	-2	87	85
70-75	1	0	1,455	3,978	5,433	2	23	25
75-80	5	0	1,214	1,288	2,502	2	16	17
80-85	0	0	739	129	868	2	3	5
85+	0	0	1,005	0	1,005	1	0	1
<b>Total</b>	<b>11</b>	<b>0</b>	<b>5,568</b>	<b>14,343</b>	<b>19,911</b>	<b>4</b>	<b>129</b>	<b>133</b>

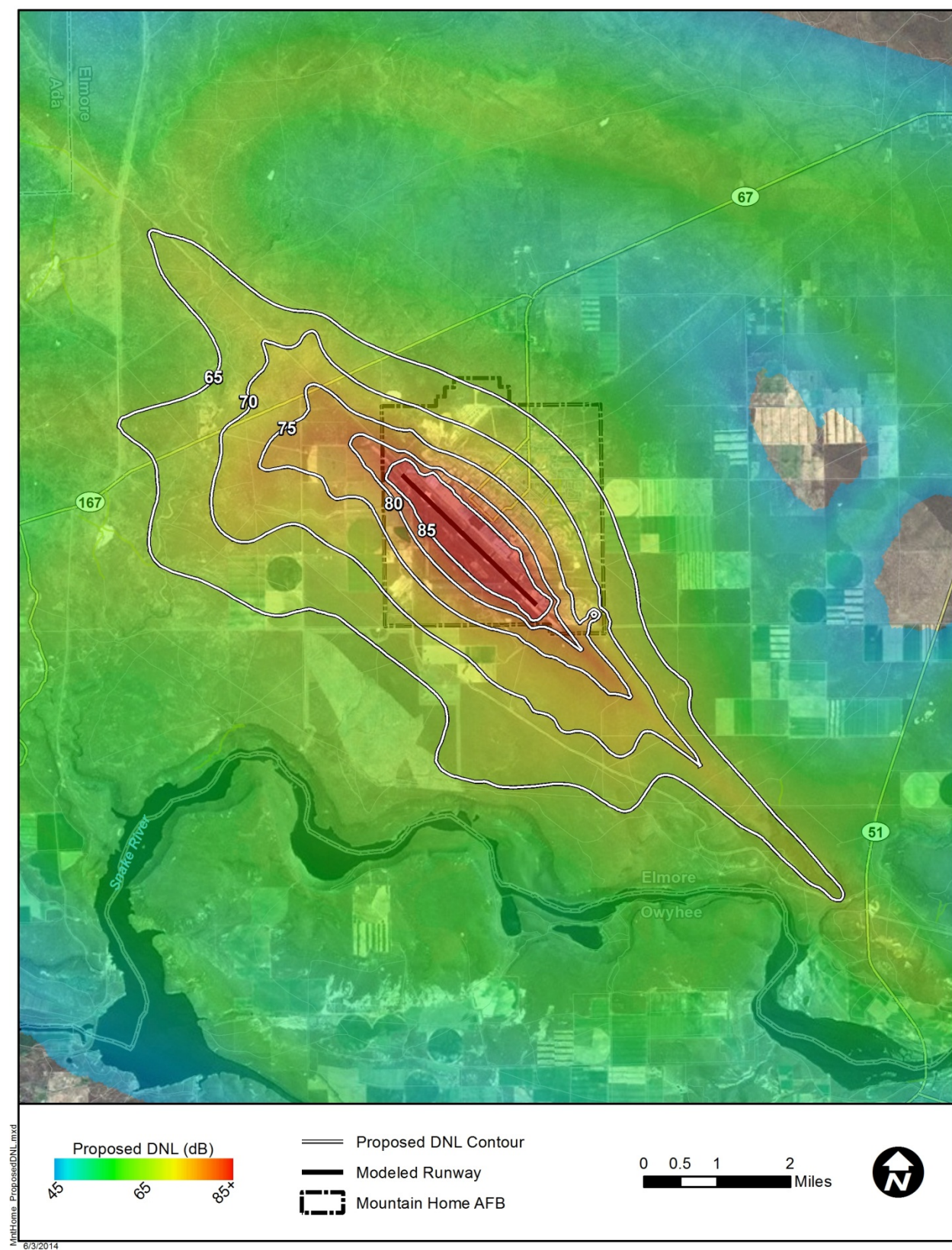
<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

<sup>3</sup> Values rounded to nearest whole number and may not sum to total

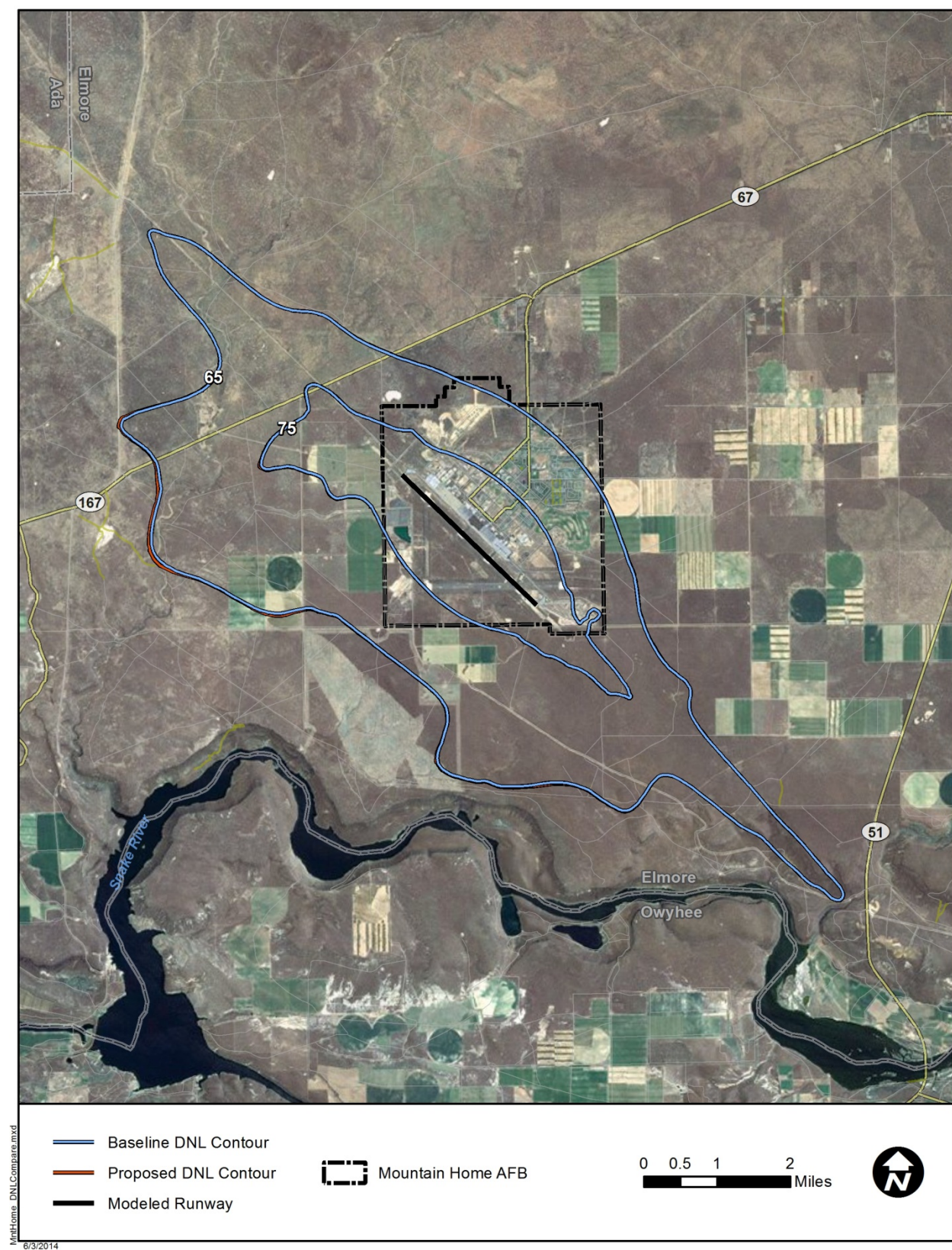


**Figure 4.2-3. Mountain Home AFB Proposed DNL Noise Contour Map**





**Figure 4.2-4. Mountain Home AFB Comparison DNL Noise Contour Map**



#### 4.2.2.2 Mountain Home AFB Airspace Noise

**MTRs:** The airspace within the ROI is currently in use by A-10, F-15 and other military jets. Intermittent aircraft overflights in these areas occur presently. Single-event noise levels for direct overflight of the A-29 along MTRs and in the training ranges are shown in **Table 4.2-7** for typical local weather conditions.

**Table 4.2-7. Single-Event Noise Levels Along MTR's near Mountain Home AFB**

Altitude (ft AGL) <sup>1</sup>	A-29 90% Torque, 240 kts		A-10A 6200 NF, 300 kts		F-15A			
					High-speed 88% NC, 570 kts		Low-speed 77% NC, 450 kts	
	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>
500	96	87	102	99	115	117	107	108
1,000	91	80	96	91	110	110	102	100
2,000	86	73	88	82	104	103	95	92
5,000	78	63	76	68	95	91	85	79

Mountain Home AFB nominal elevation = 2996 ft MSL;

Weather 55°F, 47% Relative Humidity, Pressure 29.96 in Hg;

<sup>1</sup> Direct over-flight

<sup>2</sup> Values rounded to nearest decibel

It can be seen in **Table 4.2-7** that single event noise levels would be much lower than aircraft currently using the MTRs. Up to 50 A-29 annual training sorties would fly along the MTRs with approximately 24 occurring in the busiest month. Each sortie would utilize one and perhaps portions of a second MTR. Therefore use of the MTRs would be infrequent. While the A-29 may be quieter relative to other military jets currently using the airspace, single A-29 events may be more perceptible due to the tonality of its prop engine compared to broadband noise for jets and slightly longer noise events because of slower airspeed. Potential impacts to the acoustic environment would not be significant.

**MOAs and Restricted Airspace:** Noise exposure under airspace is shown in **Table 4.2-8**. Increases in the L<sub>dnmr</sub> would be less than 1 dB and would not likely be discernable.



**Table 4.2-8. Mountain Home AFB Proposed Busy Month  $L_{dnmr}$** 

Airspace	$L_{dnmr}$ (dBA) <sup>1</sup>	Change
Jawbridge North MOA	64	< 1
Jawbridge South MOA	< 45	< 1
Owyhee North MOA	64	< 1
Owyhee South MOA	< 45	< 1
Paradise North MOA	< 45	< 1
Paradise South MOA	< 45	< 1
Saddle A MOA	< 45	< 1
Saddle B MOA	< 45	< 1
Saylor Creek Range (R-3202) <sup>2</sup>	64	< 1
Juniper Butte Range (R-3204) <sup>3</sup>	64	< 1

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> The noise levels shown for Saylor Creek Range are for R-3202 Low and High combined.

<sup>3</sup> The noise levels shown for Juniper Butte Range are for R-3204A, B, and C combined.

#### 4.2.2.3 Mountain Home AFB Conclusion

At Mountain Home AFB the Proposed Action would increase military aircraft operations at an active air base and in training airspace which is currently used by military jets. In general, the vicinity of Mountain Home AFB is rural and sparsely populated. Increases in the DNL (and  $L_{dnmr}$ ) would be less than 1 dB. Potential impacts to the acoustic environment would not be significant. Proposed activity would follow all flight rules and regulations including avoidance of noise sensitive areas.

### 4.2.3 Alternative C: Shaw AFB

#### 4.2.3.1 Shaw AFB Airfield Noise

Comparison of single-event noise levels for based F-16Cs at Shaw AFB and the A-29 are shown in **Table 4.2-9** for typical local weather conditions. The Proposed Action would increase airfield operations by 37 percent from 43,562 to 59,762 annual operations, as shown in **Table 3.2-1**. The resulting annual average day DNL for Proposed Action at Shaw AFB is shown in **Figure 4.2-5** and DNL comparison map to baseline conditions shown in **Figure 4.2-6**. Acreage and population counts for areas under the Proposed Action DNL are listed in **Table 4.2-10**. The noise contours from airfield operations would expand slightly. Increases in the DNL would be less than 1 dB and would not likely be discernable.

**Table 4.2-9. Comparison of Single-Event Noise Levels at Shaw AFB**

Condition <sup>1</sup>	Based F-16C <sup>2,4</sup>				A-29 <sup>5</sup>			
	SEL (dBA)	Lmax (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	Lmax (dBA)	Power (%Torque)	Speed (kts)
Afterburner Take-Off <sup>3</sup> (1,000 ft AGL)	110	104	104%	300	-	-	-	-
Military Power Take-Off (1,000 ft AGL)	110	104	104%	300	95	81	100%	200
Arrival <sup>4</sup> (non-break, through 1,000 ft AGL)	81	73	83.5%	175	85	79	50%	110
Overhead Break (downwind leg, 2,000 ft MSL / 1,800 ft AGL)	92	83	90%	200	80	72	50%	120

Shaw AFB nominal elevation = 242 ft MSL; weather 63°F, 67% Relative Humidity;

SEL = Sound Exposure Level; Lmax = Maximum (instantaneous) Sound Level; dBA = A-weighted Decibel;

NC = Engine core revolutions per minute; kts = knots; ft = feet;

Notes: Notes: SEL and Lmax values rounded to the nearest decibel.

<sup>1</sup> SEL and Lmax values are for level flights directly overhead at the given altitude

<sup>2</sup> Modeled F-16C. with F110-GE-100 engine.

<sup>3</sup> Power reduced from Afterburner to military power prior to reaching 1,000 ft AGL

<sup>4</sup> Values reflect gear-up conditions.

<sup>5</sup> A-29 Modeled as T-6 (PT6A-68 engine) + 3dB

**Table 4.2-10. Shaw AFB Proposed Acreage and Population Counts**

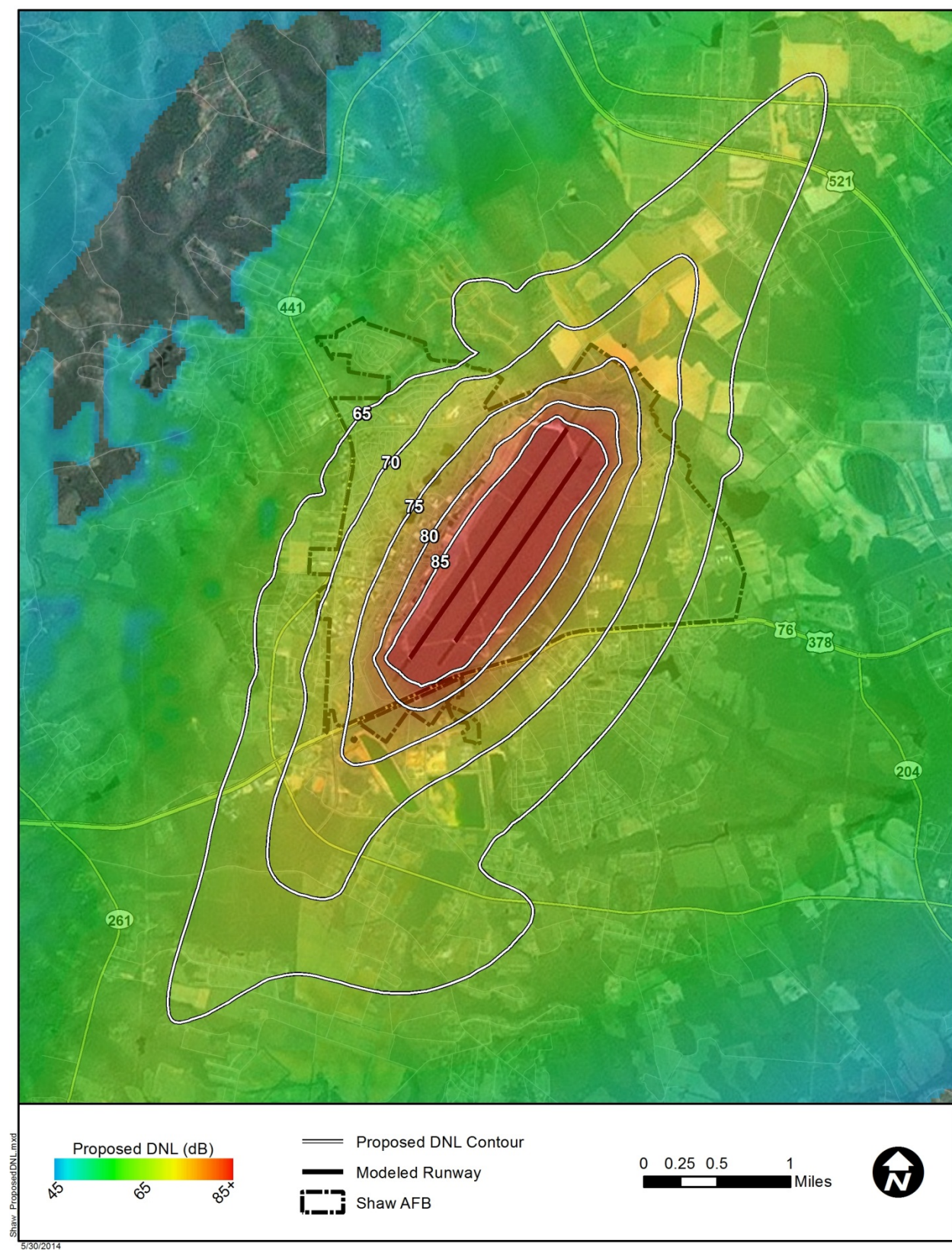
DNL	Population <sup>1,2,3</sup>		Acreage <sup>3</sup>					
			Proposed			Change		
	Proposed	Change	On-Base	Off-Base	Total	On-Base	Off-Base	Total
65-70	2,895	56	499	3,872	4,372	0	58	58
70-75	500	6	750	1,217	1,968	-2	19	17
75-80	47	0	688	151	839	2	5	8
80-85	2	0	401	13	413	1	0	1
85+	0	0	702	0	702	1	0	1
<b>Total</b>	<b>3,444</b>	<b>63</b>	<b>3,041</b>	<b>5,253</b>	<b>8,294</b>	<b>2</b>	<b>83</b>	<b>85</b>

<sup>1</sup> Excludes all on-base population (as indicated by the census block data)

<sup>2</sup> Estimated counts based on 2010 Census Blocks using a geometric proportion method

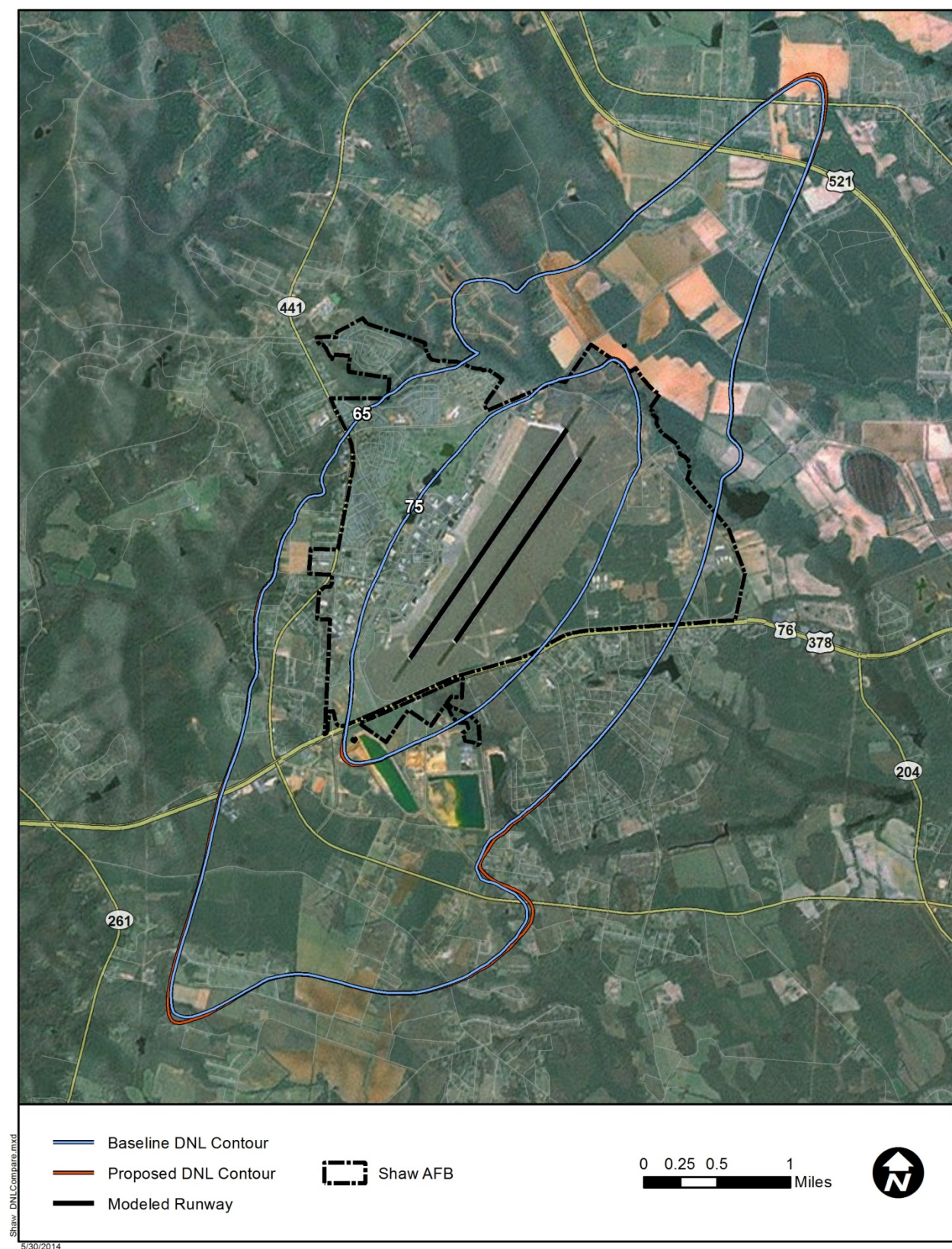
<sup>3</sup> Values rounded to nearest whole number and may not sum to total

**Figure 4.2-5. Shaw AFB Proposed DNL Noise Contour Map**





**Figure 4.2-6. Shaw AFB Comparison DNL Noise Contour Map**



#### 4.2.3.2 Shaw AFB Airspace Noise

**MTRs:** The airspace within the ROI is currently in use by F-16, F-18 and other military jets. Intermittent aircraft overflights in these areas occur presently. Single-event noise levels for direct overflight of the A-29 along MTRs and in the training ranges are shown in **Table 4.2-11** for typical local weather conditions.

**Table 4.2-11. Single-Event Noise Levels Along MTR's near Shaw AFB**

Altitude (ft AGL) <sup>1</sup>	A-29 90% Torque, 240 kts		F-16C				F-18E/F			
			High-speed 101% NC, 585 kts		Low-speed 95% NC, 465 kts		High-speed 92% N2, 500 kts		Low-speed 83.3% NC, 370 kts	
	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>	SEL (dB) <sup>2</sup>	L <sub>max</sub> (dB) <sup>2</sup>
500	97	88	108	111	99	99	116	114	107	104
1,000	91	81	103	103	93	92	110	107	102	97
2,000	86	73	96	95	87	83	103	98	95	89
5,000	78	63	86	83	76	70	91	84	84	75

Shaw AFB nominal elevation = 242 ft MSL;

Weather 63°F, 67% Relative Humidity, Pressure 29.92 inHg;

<sup>1</sup> Direct over-flight

<sup>2</sup> Values rounded to nearest decibel

It can be seen in **Table 4.2-11** that single event noise levels would be much lower than aircraft currently using the MTRs. Up to 50 A-29 annual training sorties would fly along the MTRs with approximately 24 occurring in the busiest month. Each sortie would utilize one and perhaps portions of a second MTR. Therefore use of the MTRs would be infrequent. While the A-29 may be quieter relative to other military jets currently using the airspace, single A-29 events may be more perceptible due to the tonality of its prop engine compared to broadband noise for jets and slightly longer noise events because of slower airspeed. Potential impacts to the acoustic environment would not be significant.

**MOAs and Restricted Airspace:** Noise exposure under airspace is shown in **Table 4.2-12**. Increases in the L<sub>dnmr</sub> would be less than 1 dB and would not likely be discernable.

**Table 4.2-12. Shaw AFB Proposed Busy Month L<sub>dnmr</sub>**

Airspace	L <sub>dnmr</sub> (dBA) <sup>1</sup>	Change
Gamecock A MOA	57	< 1
Gamecock B MOA	57	< 1
Gamecock C MOA	57	< 1
Gamecock D MOA	57	< 1
Gamecock I MOA	57	< 1
Poinsett MOA	68	< 1
Robroy LOA	57	< 1
Poinsett Range (R-6002) <sup>2</sup>	68	< 1
Townsend Range (R-3007) <sup>3</sup>	54	< 1

<sup>1</sup> Values rounded to nearest decibel

<sup>2</sup> The noise levels shown for Poinsett Range are for R-6002A, B, and C combined.

<sup>3</sup> The noise levels shown for Townsend Range are for R-3007A, B, C, and D combined.

#### **4.2.3.3 Shaw AFB Conclusion**

At Shaw AFB the Proposed Action would increase military aircraft operations at an active air base and in training airspace which is currently used by military jets. In general, the vicinity of Shaw AFB is rural and sparsely populated. Increases in the DNL (and  $L_{dnmr}$ ) would be less than 1 dB. Potential impacts to the acoustic environment would not be significant. Proposed activity would follow all flight rules and regulations including avoidance of noise sensitive areas.

#### **4.2.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative, the Proposed Action would not be implemented. Existing conditions would continue and noise levels would remain the same. There would be no additional impact to the acoustic environment.

### **4.3 AIR QUALITY**

Emissions from air operations and emissions from ground operations are considered when determining impacts. Impacts would be considered significant if emissions would affect the AQCR attainment status or, in an area of nonattainment or maintenance, preclude the region from meeting its attainment goals. As was mentioned in **Section 3.3**, all counties are in attainment for all criteria pollutants.

The Proposed Action is to beddown 20 A-29 aircraft for the duration of the AAF training program which is scheduled to start in February 2015 and extend into 2018. Preparation for the training program at the selected location could begin as early as September 2014. The program would train up to 30 AAF pilots and 90 AAF maintainers. Annual flight operations to support the training program are estimated to be a total 8,100 operations [3,132 Landing and Take-off (LTO) and 4,968 Touch-and-Go (TGO)].

#### **4.3.1 Alternative A (Preferred Alternative): Moody AFB**

Under the Proposed Action, air quality impacts would slightly increase because of the additional operations that would occur. **Table 4.3-1** presents emissions that would be generated by aircraft and ground support maintenance equipment. **Appendix B** contains the emissions calculations and factors applied. Projected aircraft emissions were based on the listed annual flight operations. Maintenance emissions were combined and referred together as operational emissions. As indicated, there would be minor increase in emissions generated through 2018. After 2018, the emissions would return to levels as it existed prior to the Proposed Action. Emissions generated by the Proposed Action would be minimal and would not change the Lanier and Lowndes Counties AQCR attainment status.

**Table 4.3-1. Operational Emissions at/around Moody AFB**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
<b>Operational Emissions</b>							
A-29 LAS	1.39	19.63	13.01	0.43	1.44	1.06	1228
Lanier County <sup>2</sup>	13,557	5,931	481	22	2,266	651	-
Lowndes County <sup>2</sup>	25,765	33,591	6,476	784	8,746	2,367	
Percent Lanier County Contribution	0.010	0.331	2.705	1.955	0.064	0.163	-
Percent Lowndes County Contribution	0.005	0.058	0.201	0.055	0.0165	0.045	

<sup>1</sup> CO<sub>2</sub> in metric tons per year. N<sub>2</sub>O and CH<sub>4</sub> not calculated.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

The change in climate conditions caused by GHG emissions is a global effect and, as such requires that these emissions be assessed on a global scale. Therefore, the project-level emissions modeled for this EA are provided for the purpose of disclosure and comparison of localized incremental emissions, with little to no bearing on the issue of global climate change. As can be seen in the tables above, these anticipated emissions are 1,228 metric tons of CO<sub>2</sub>e per year which is well below the CEQ meaningful assessment threshold indicator of 25,000 metric tons per year (only 4.9% of the CEQ indicator). Therefore, the potential impact on climate change attributed to the Proposed Action is insignificant.

The estimated emissions associated with this Proposed Action are below the General Conformity Rule *de minimis* levels threshold values, indicating no significant impact to air quality; therefore, no further air assessment is needed.

### 4.3.2 Alternative B: Mountain Home AFB

Under the Proposed Action, air quality impacts would slightly increase because of the additional operations that would occur. **Table 4.3-2** presents emissions that would be generated by aircraft and ground support maintenance equipment. **Appendix B** contains the emissions calculations and factors applied. Projected aircraft emissions were based on the listed annual flight operations. Maintenance emissions were combined and referred together as operational emissions. As indicated, there would be minor increase in emissions generated through 2018. After 2018, the emissions would return to levels as it existed prior to the Proposed Action. Emissions generated by the Proposed Action would be minimal and would not change the Elmore County AQCR attainment status.

**Table 4.3-2. Operational Emissions at/around Mountain Home AFB**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
<b>Operational Emissions</b>							
A-29 LAS	1.39	19.63	13.01	0.43	1.44	1.06	1228
Elmore County <sup>2</sup>	33,019	20,277	4,355	85	7,734	1,691	-
Percent County Contribution	0.004	0.097	0.299	0.506	0.019	0.063	-

<sup>1</sup> CO<sub>2</sub> in metric tons per year. N<sub>2</sub>O and CH<sub>4</sub> not calculated.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

The change in climate conditions caused by GHG emissions is a global effect and, as such requires that these emissions be assessed on a global scale. Therefore, the project-level emissions modeled for this EA are provided for the purpose of disclosure and comparison of localized incremental emissions, with little to no bearing on the issue of global climate change. As can be seen in the tables above, these anticipated emissions are 1,228 metric tons of CO<sub>2</sub>e per year which is well below the CEQ meaningful assessment threshold indicator of 25,000 metric tons per year (only 4.9% of the CEQ indicator). Therefore, the potential impact on climate change attributed to the proposed action is insignificant.

The estimated emissions associated with this Proposed Action are below the General Conformity Rule *de minimis* levels threshold values, indicating no significant impact to air quality; therefore, no further air assessment is needed.

#### 4.3.3 Alternative C: Shaw AFB

Under the Proposed Action, air quality impacts would slightly increase because of the additional operations that would occur. **Table 4.3-3** presents emissions that would be generated by aircraft and ground support maintenance equipment. **Appendix B** contains the emissions calculations and factors applied. Projected aircraft emissions were based on the listed annual flight operations. Maintenance emissions were combined and referred together as operational emissions. As indicated, there would be minor increase in emissions generated through 2018. After 2018, the emissions would return to levels as it existed prior to the Proposed Action. Emissions generated by the Proposed Action would be minimal and would not change the Sumter County AQCR attainment status.

**Table 4.3-3. Operational Emissions at/around Shaw AFB**

Location	Criteria Pollutants in tons per year						
	VOCs	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2</sub> e <sup>1</sup>
<b>Operational Emissions</b>							
A-29 LAS	1.39	19.63	13.01	0.43	1.44	1.06	1228
Sumter County <sup>2</sup>	23,324	19,233	3,456	184	5,745	1,449	-
Percent County Contribution	0.006	0.102	0.376	0.234	0.025	0.073	-

<sup>1</sup> CO<sub>2</sub> in metric tons per year. N<sub>2</sub>O and CH<sub>4</sub> not calculated.

<sup>2</sup> USEPA 2011; 2011 data are the most recently recorded by USEPA.

The change in climate conditions caused by GHG emissions is a global effect and, as such requires that these emissions be assessed on a global scale. Therefore, the project-level emissions modeled for this EA are provided for the purpose of disclosure and comparison of localized incremental emissions, with little to no bearing on the issue of global climate change. As can be seen in the tables above, these anticipated emissions are 1,228 metric tons of CO<sub>2</sub>e per year which is well below the CEQ meaningful assessment threshold indicator of 25,000 metric tons per year (only 4.9% of the CEQ indicator). Therefore, the potential impact on climate change attributed to the proposed action is insignificant.

The estimated emissions associated with this Proposed Action are below the General Conformity Rule *de minimis* levels threshold values, indicating no significant impact to air quality; therefore, no further air assessment is needed. The South Carolina Department of Health and Environmental Control (SCDHEC) provided general comments on the Proposed Action in a letter dated 30 July 2014. The letter noted that new ozone standards that may update attainment areas are forthcoming from USEPA, and that all



necessary environmental permits must be obtained in accordance with applicable state and Federal regulations (**Appendix A**).

#### **4.3.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative, existing conditions would continue and emissions generated would remain the same levels. Continued operation of the base would not change the AQCR attainment status or represent a major contribution to the regional air quality. This would have no additional impact on air quality.

### **4.4 SAFETY AND OCCUPATIONAL HEALTH**

Adverse impacts to safety and occupational health would occur if the implementation of the Proposed Action resulted in a substantial increase in risk to the safety and health of Air Force employees, others at the base, or employees associated with the proposed action.

There is no generally recognized threshold for air safety above which hazards are considered to be unacceptable and below which they are considered acceptable. Instead, airspace managers have adopted a variety of measures to manage and minimize risks. These include, but are not limited to, providing and disseminating timely information to airspace users, eliminating or managing hazards in the airfield environment, requiring suitable levels of training for those using the airspace, setting appropriate standards for equipment performance and maintenance, defining rules governing the use of airspace, and assigning well-defined responsibilities to aviators and airspace managers. These measures can never eliminate risk, but their adoption can minimize it.

#### **4.4.1 Alternative A (Preferred Alternative): Moody AFB**

There is a small risk of Class A mishaps and bird/wildlife strikes associated with every individual airfield operation; therefore, the likelihood of such events rises as more operations are generated. As described in **Section 4.1.1**, the implementation of the Proposed Action would generate 16,200 operations annually for its duration, an approximate 45.9 percent increase over baseline airfield operations at Moody AFB.

The A-29 aircraft is not part of the USAF inventory; therefore no USAF data exists from which to extrapolate estimated mishap rates. However, international operators of the closely related Embraer EMB-312 model report that the aircraft is very safe and rugged (Lozada-Ruiz 2014). Each AAF trainee pilot would be accompanied by a highly skilled USAF instructor pilot who has been trained to fly the A-29 and would be able to take control of the aircraft in an emergency.

For the entire duration of the Proposed Action, Moody AFB would continue to manage its airfield operations according to the directives of Moody AFB Instruction 11-250, *Aircrew Operational Procedures/Air Traffic Control/Airfield Management* with no change to flight rules, mishap response, or standard operating procedures and other measures designed to manage risk.

With any increase in operations, there is a commensurate increase in exposure to BASH hazards. An average of twenty-six bird/wildlife strikes occur annually at Moody AFB. Most cause no damage or minor damage to aircraft. Operations under the Proposed Action would be conducted in the same manner as all other airfield operations at this installation, and the Proposed Action is not expected to create extraordinary opportunities for strike events. Moody AFB would continue its effective program to

manage BASH hazards, which is structured to adapt as changes in operational tempo and seasonal wildlife concentrations affect the exposure of aircraft and personnel to risk.

The Proposed Action would not change how Moody AFB responds to wildland fire on the installation. Moody AFB would continue to meet the fire hazard management requirements of AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range Planning and Operations* in accordance with the Grand Bay Range Wildland Fire Management Plan. Townsend Range's fire hazards would continue to be managed by Marine Corps Air Station Beaufort. While a minimal risk of wildland fire is present in training range activities associated with the Proposed Action, the Proposed Action uses types of training munitions already in use, which pose no extraordinary fire hazard compared to baseline activities. In the event that a wildland fire did occur, the 23d Civil Engineer Squadron Fire Department would respond as it would to any other fire and contact other agencies for assistance as required.

Plans and programs implemented by the USAF and Moody AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks to the extent possible and practicable during the execution of the Proposed Action.

#### **4.4.2 Alternative B: Mountain Home AFB**

There is a small risk of Class A mishaps and bird/wildlife strikes associated with every individual airfield operation; therefore, the likelihood of such events rises as more operations are generated. As described in **Section 4.1.2**, the implementation of the Proposed Action would generate 16,200 operations annually for its duration, an approximate 53.5 percent increase over baseline airfield operations at Mountain Home AFB.

The A-29 aircraft is not part of the USAF inventory; therefore no USAF data exists from which to extrapolate estimated mishap rates. However, international operators of the closely related Embraer EMB-312 model report that the aircraft is very safe and rugged (Lozada-Ruiz 2014). Each AAF trainee pilot would be accompanied by a highly skilled USAF instructor pilot who has been trained to fly the A-29 and would be able to take control of the aircraft in an emergency.

For the entire duration of the Proposed Action, Mountain Home AFB would continue to manage its airfield operations according to the directives of Mountain Home AFB Instruction 11-250, *Aircrew Operational Procedures/Air Traffic Control/Airfield Management* with no change to flight rules, mishap response, or standard operating procedures and other measures designed to manage risk.

With any increase in operations, there is a commensurate increase in exposure to BASH hazards. Approximately two bird/wildlife strikes occur annually, on average, at Mountain Home AFB. Operations under the Proposed Action would be conducted in the same manner as all other airfield operations at this installation, and the Proposed Action is not expected to create extraordinary opportunities for strike events. Mountain Home AFB would continue its effective program to manage BASH hazards, which is structured to adapt as changes in operational tempo and seasonal wildlife concentrations affect the exposure of aircraft and personnel to risk.

The Proposed Action would not change how Mountain Home AFB responds to wildland fire on the installation. Mountain Home AFB would continue to meet the fire hazard management requirements of AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range*

*Planning and Operations* in accordance with the MHRC Wildland Fire Management Plan. While a minimal risk of wildland fire is present in training range activities associated with the Proposed Action, the Proposed Action uses types of training munitions already in use, which pose no extraordinary fire hazard compared to baseline activities. In the event that a wildland fire did occur, the 23d Civil Engineer Squadron Fire Department would respond as it would to any other fire and contact BLM for assistance as necessary.

Plans and programs implemented by the USAF and Mountain Home AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks to the extent possible and practicable during the execution of the Proposed Action.

#### **4.4.3 Alternative C: Shaw AFB**

There is a small risk of Class A mishaps and bird/wildlife strikes associated with every individual airfield operation; therefore, the likelihood of such events rises as more operations are generated. As described in **Section 4.1.3**, the implementation of the Proposed Action would generate 16,200 operations annually for its duration, an approximate 33.4 percent increase over baseline airfield operations at Shaw AFB.

The A-29 aircraft is not part of the USAF inventory; therefore no USAF data exists from which to extrapolate estimated mishap rates. However, international operators of the closely related Embraer EMB-312 model report that the aircraft is very safe and rugged (Lozada-Ruiz 2014). Each AAF trainee pilot would be accompanied by a highly skilled USAF instructor pilot who has been trained to fly the A-29 and would be able to take control of the aircraft in an emergency.

For the entire duration of the Proposed Action, Shaw AFB would continue to manage its airfield operations according to the directives of Shaw AFB Instruction 11-250, *Aircrew Operational Procedures/Air Traffic Control/Airfield Management* with no change to flight rules, mishap response, or standard operating procedures and other measures designed to manage risk.

With any increase in operations, there is a commensurate increase in exposure to BASH hazards. Fewer than seven bird/wildlife strikes occur annually, on average, at Shaw AFB. Operations under the Proposed Action would be conducted in the same manner as all other airfield operations at this installation, and the Proposed Action is not expected to create extraordinary opportunities for strike events. Shaw AFB would continue its effective program to manage BASH hazards, which is structured to adapt as changes in operational tempo and seasonal wildlife concentrations affect the exposure of aircraft and personnel to risk.

The Proposed Action would not change how Shaw AFB responds to wildland fire on the installation. Shaw AFB would continue to meet the fire hazard management requirements of AFI 32-2001, *Air Force Fire Protection Operation and Fire Prevention Program* and AFI 13-212, *Range Planning and Operations* in accordance with the Poinsett Range Wildland Fire Management Plan. While a minimal risk of wildland fire is present in training range activities associated with the Proposed Action, the Proposed Action uses types of training munitions already in use, which pose no extraordinary fire hazard compared to baseline activities. In the event that a wildland fire did occur, the 20th Civil Engineer Squadron Fire Department would respond as it would to any other fire and contact other agencies for assistance as required.

Plans and programs implemented by the USAF and Shaw AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks to the extent possible and practicable during the execution of the Proposed Action.

#### **4.4.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative, the Proposed Action would not be executed at any USAF installation, and there would be no impacts to personnel safety or occupational health attributable to the action.

### **4.5 HAZARDOUS MATERIALS / WASTE**

The magnitude of potential impacts associated with hazardous materials and wastes depends on the toxicity, transportation, storage, and disposal of these substances. The threshold of significance would be met if hazardous materials and hazardous waste substantially increase the human health risk or environmental exposure through storage, use, transportation, or disposal of these substances. An increase in the quantity or toxicity of hazardous materials and/or hazardous waste handled by a facility may also signify a potentially adverse effect, especially if a facility was not equipped to handle the new waste stream. For ERP/MMRP sites, impacts would be adverse if the contaminated site was disturbed or there was a change in its remediation status.

#### **4.5.1 Alternative A (Preferred Alternative): Moody AFB**

##### **4.5.1.1 Hazardous Materials**

Under the Proposed Action, hazardous materials associated with the beddown of A-29 aircraft at Moody AFB would include flammable and combustible liquids, hydraulic fluid, engine oil, Jet-A fuel, acids, corrosives, caustics, antifreeze and deicing fluids, compressed gases, solvents, paints, paint thinners, adhesives, pesticides, and explosives related to the seat-ejection system and canopy. These materials are similar to materials currently used by other aircraft at Moody AFB; there would be no change in the procedures used to manage hazardous materials. Additionally, hazardous materials associated with the beddown of A-29 aircraft at Moody AFB would be stored under applicable hazardous materials storage regulations to minimize potential risks. (Jet-A fuel storage is described under **Section 4.9 Infrastructure/Utilities**). Explosives related to the seat-ejection system and canopy would only be handled by USAF personnel or maintenance support contractors, no AAF personnel would handle any explosives. Safety procedures described in the Moody AFB Spill Prevention and Response Plan would be adhered to. Should an accidental release or spill of hazardous substances occur, procedures within the Spill Prevention and Response Plan would be followed to minimize potential impacts. No significant impacts from hazardous materials would occur as a result of the Proposed Action.

##### **4.5.1.2 Hazardous Waste**

Hazardous wastes associated with A-29 aircraft would include paints, solvents, oils, stripping mixtures, waste rags, and hydraulic fluids. There would be no substantive changes to the quantities of hazardous wastes generated at the installation; therefore, the status of Moody AFB as a Large Quantity Generator pursuant to RCRA would not change. The types of hazardous waste generated by A-29 aircraft would be similar to waste streams associated with aircraft currently based at Moody AFB. No additional hazardous waste storage tanks, improvements to spill containment structures, or changes to hazardous waste disposal procedures would be required under the Proposed Action. Maintenance support contractors would be responsible for the handling of all hazardous wastes associated with the Proposed Action, in accordance

with applicable federal, state, and local regulations, along with Moody AFB's Hazardous Waste Management Plan. Any additional hazardous waste generation or handling areas that are established due to the addition of the A-29 aircraft would also be managed in accordance with the installation's Hazardous Waste Management Plan. Therefore, no significant impacts from hazardous wastes would occur as a result of the Proposed Action.

#### **4.5.1.3 Environmental Restoration Program/Military Munitions Response Program**

Under the Proposed Action, existing infrastructure would be renovated and/or repaired, and would not impact any ERP sites, MMRP sites, or known contaminated areas, including the 11 ERP sites and one MMRP site that have on-going investigations or corrective actions associated with them. There would be no new construction that would affect contaminated groundwater or soils. Any potential impacts associated with unknown contamination, however, would be mitigated through existing regulations and procedures as well as worker awareness and safety training. No significant impacts to ERP or MMRP sites would occur as a result of the Proposed Action.

#### **4.5.1.4 Toxic Substances**

Moody AFB has five buildings (701, 706, 718, 754, and 757) that would potentially be utilized as part of the Proposed Action that were constructed prior to 1978 and could contain ACMs and/or LBP. Therefore, prior to the beginning of any infrastructure upgrades or improvements related to the Proposed Action, surveys would be conducted to determine the presence of ACMs and LBP. If ACMs or LBP are present, Moody AFB would employ appropriately trained and licensed contractors to perform the ACM or LBP removal work, in accordance with AFI 32-7042 *Waste Management* (2010), TSCA, Georgia state law, and the base's management plans. All removed ACM would be taken to landfills approved for disposal. Potential LBP-containing items would be disposed of with construction and demolition debris, in accordance with Georgia state law. PCBs would not be impacted as part of the Proposed Action. Since all applicable regulations would be followed regarding toxic substances, impacts would not be significant.

### **4.5.2 Alternative B: Mountain Home AFB**

#### **4.5.2.1 Hazardous Materials**

Under the Proposed Action, hazardous materials associated with the beddown of A-29 aircraft at Mountain Home AFB would include flammable and combustible liquids, hydraulic fluid, engine oil, Jet-A fuel, acids, corrosives, caustics, antifreeze and deicing fluids, compressed gases, solvents, paints, paint thinners, adhesives, pesticides, and explosives related to the seat-ejection system and canopy. These materials are similar to materials currently used by other aircraft at Mountain Home AFB; there would be no change in the procedures used to manage hazardous materials. Additionally, hazardous materials associated with the beddown of A-29 aircraft at Mountain Home AFB would be stored under applicable hazardous materials storage regulations to minimize potential risks. (Jet-A fuel storage is described under **Section 4.9 Infrastructure/Utilities**). Explosives related to the seat-ejection system and canopy would only be handled by USAF personnel or maintenance support contractors, no AAF personnel would handle any explosives. Should an accidental release or spill of hazardous substances occur, procedures within the HAZMAT Emergency Planning and Response Plan would be followed to minimize potential impacts. Therefore, no significant impacts from hazardous materials would occur as a result of the Proposed Action.

#### **4.5.2.2 Hazardous Waste**

Hazardous wastes associated with A-29 aircraft would include paints, solvents, oils, stripping mixtures, waste rags, and hydraulic fluids. The types of hazardous waste streams generated by A-29 operations are expected to remain similar to those being generated by existing aircraft at Mountain Home AFB. The status of Mountain Home AFB as a Large Quantity Generator pursuant to RCRA would not change. The types of hazardous waste generated by A-29 aircraft would be similar to waste streams associated with aircraft currently based at Mountain Home AFB. No additional hazardous waste storage tanks, improvements to spill containment structures, or changes to hazardous waste disposal procedures would be required under the Proposed Action. Maintenance support contractors would be responsible for the handling of all hazardous wastes associated with the A-29 Beddown, in accordance with applicable federal, state, and local regulations, along with Mountain Home AFB's Hazardous Waste Management Plan. Any additional hazardous waste generation or handling areas that are established due to the addition of the A-29 aircraft would also be managed in accordance with the installation's Hazardous Waste Management Plan. Therefore, no significant impacts from hazardous wastes would occur as a result of the Proposed Action.

#### **4.5.2.3 Environmental Restoration Program/Military Munitions Response Program**

Since there would be no ground disturbing activities and only the interiors of existing buildings would be renovated as part of the Proposed Action, there would be no impacts to any of the 33 ERP sites or two MMRP sites. Any potential impacts associated with unknown contamination, however, would be mitigated through existing regulations and procedures as well as worker awareness and safety training. Therefore, no significant impacts to ERP or MMRP sites would occur as a result of the Proposed Action.

#### **4.5.2.4 Toxic Substances**

Any structures that would potentially be utilized for training would be inspected for ACM and LBP according to established Mountain Home AFB procedures prior to modification. A total of five buildings (211, 1331, 1361, 1363, and 2425) that would potentially be utilized as part of the Proposed Action may contain ACM or LBP due to their age; Building 211 is known to contain both ACM and LBP (USAF 2013a). All ACM and LBP would be managed and disposed of in accordance with AFI 32-7042 *Waste Management* (2010), TSCA, OSHA regulations, Idaho requirements (regarding site work practices for buildings with LBP and ACM), and established Mountain Home AFB procedures. PCBs would not be impacted as part of the Proposed Action. Since all applicable regulations would be followed regarding toxic substances, impacts would be less than significant.

### **4.5.3 Alternative C: Shaw AFB**

#### **4.5.3.1 Hazardous Materials**

Under the Proposed Action, hazardous materials associated with the beddown of A-29 aircraft at Shaw AFB would include flammable and combustible liquids, hydraulic fluid, engine oil, Jet-A fuel, acids, corrosives, caustics, antifreeze and deicing fluids, compressed gases, solvents, paints, paint thinners, adhesives, pesticides, and explosives related to the seat-ejection system and canopy. These materials are similar to materials currently used by other aircraft at Shaw AFB; there would be no change in the procedures used to manage hazardous materials, as they would be stored under applicable hazardous materials storage regulations to minimize potential risks. (Jet-A fuel storage is described under

**Section 4.9 Infrastructure/Utilities).** Explosives related to the seat-ejection system and canopy would only be handled by USAF personnel or maintenance support contractors, no AAF personnel would handle any explosives. Should an accidental release or spill of hazardous substances occur, procedures within Shaw AFB's Integrated Contingency Plan for Oil and Hazardous Substance Spill Prevention and Response would be followed to minimize potential impacts. No significant impacts from hazardous materials would occur as a result of the Proposed Action.

The SCDHEC noted in their memorandum dated 30 July 2014 (**Appendix A**) that Shaw AFB operates under a regulatory exemption for hazardous waste units accumulating hazardous wastes for 90 days or less. Shaw will continue to meet the 90-day disposal deadline for hazardous wastes under the Proposed Action regardless of any possible increase in the volume of waste generated.

#### **4.5.3.2 Hazardous Waste**

Hazardous wastes associated with A-29 aircraft would include paints, solvents, oils, stripping mixtures, waste rags, and hydraulic fluids. The status of Shaw AFB as a Large Quantity Generator pursuant to RCRA would not change. The types of hazardous waste generated by A-29 aircraft would be similar to waste streams associated with aircraft currently based at Shaw AFB. No additional hazardous waste storage tanks, improvements to spill containment structures, or changes to hazardous waste disposal procedures would be required under the Proposed Action. Maintenance support contractors would be responsible for the handling of all hazardous wastes associated with the Proposed Action, in accordance with applicable federal, state, and local regulations, along with Shaw AFB's Hazardous Waste Management Plan. Any additional hazardous waste generation or handling areas that are established due to the addition of the A-29 aircraft would also be managed in accordance with the installation's Hazardous Waste Management Plan. Therefore, no significant impacts from hazardous wastes would occur as a result of the Proposed Action.

#### **4.5.3.3 Environmental Restoration Program/Military Munitions Response Program**

None of Shaw's 39 ERP sites would be impacted by the Proposed Action since only existing buildings and facilities would be renovated, and there would be no ground disturbing activities. As with Moody AFB and Mountain Home AFB, any potential impacts associated with unknown contamination would be mitigated through existing regulations and procedures as well as worker awareness and safety training. No significant impacts to ERP sites would occur as a result of the Proposed Action.

In a memorandum dated 30 July 2014, the SCDHEC expressed the concern that the Proposed Action could impede access to ERP site SWMU 98, complicating efforts to update current pollutant plume boundaries. Shaw AFB will work with SCDHEC to ensure access to the ERP site upon request (**Appendix A**).

#### **4.5.3.4 Toxic Substances**

A total of 5 buildings that would potentially be utilized (Buildings 114, 407, 611, 707, and 1200) may contain ACM or LBP due to their age, as all were constructed prior to 1979. These structures, and any others proposed for use, would first be inspected for ACM and LBP according to established Shaw AFB procedures. If required, any construction and demolition waste contaminated with ACM or LBP would be removed by licensed contractors and disposed of in a local hazardous waste permitted landfill in accordance with AFI 32-7042 *Waste Management*, TSCA, and other federal, state, and local laws and



regulations. PCBs would not be impacted as part of the Proposed Action. Since all applicable regulations would be followed regarding toxic substances, impacts would be less than significant.

#### **4.5.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative, the A-29 Beddown would not occur at any of the USAF installations and baseline conditions at each installation would continue. No impacts to hazardous materials, hazardous waste, ERP/MMRP sites, or toxic chemicals would occur.

### **4.6 BIOLOGICAL / NATURAL RESOURCES**

Adverse impacts to biological resources may occur if the Proposed Action would result in an adverse effect to any federally, state, or locally regulated or regionally sensitive species or valuable natural resource (sensitive plant/animal community); an adverse effect to endangered, threatened or candidate species; or if it adversely modified or destroyed their habitat to stop supporting the species using it.

#### **4.6.1 Alternative A (Preferred Alternative): Moody AFB**

Common wildlife present on Moody AFB are highly adaptable and ubiquitous. No exterior modifications or new construction would be completed under the Proposed Action therefore potential adverse impacts to habitat and wildlife associated with construction would not occur. An increase of 20 aircraft at the installation increases the potential impacts from noise as well as the risk of BASH-related incidences. Several studies have shown that the sudden appearance of aircraft and onset of noise from a low-level overflight has the potential to startle wildlife (Manci et al. 1988); however, both the visual appearance and noise levels of aircraft diminish rapidly with increasing altitude. While overflight events would increase, most would occur in MOAs and restricted airspace and at altitudes where the noise generated would not be expected to startle animals and therefore any negative impacts associated with startle responses would be limited. Additionally, the change in noise levels from the baseline in the MOAs, Ranges, and MTRs is <1 dBA (See **Section 4.2.1.2**). Based on the previous and ongoing exposure of wildlife to training by other aircraft in the airspace, as well as Moody AFB's implementation of a BASH plan, no adverse impacts to wildlife from overflights or noise are anticipated to be associated with the implementation of the Proposed Action.

The Grand Bay/Banks Lake wetland complex of over 13,000 acres is the largest freshwater lake/swamp system in the coastal plain of Georgia, exclusive of the Okefenokee Swamp (Moody AFB 2013), and provides habitat for many migratory bird species in the Grand Bay Range. None of the MOAs for the Proposed Action occur over the Okefenokee NWR, however, the Banks Lake NWR lies northeast of Moody AFB and adjacent to the Grand Bay Range. Moody AFB conducts wildlife hazard monitoring to detect changes in wildlife populations or habitat use that pose a threat to safety (Moody AFB 2013). Monthly wildlife advisories are provided to all flying squadrons, airfield management, and tower personnel for review (Moody AFB 2013) and incorporation into flight plans. In addition, aircraft would fly per AFI 11-202 Vol 3 *General Flight Rules* which includes avoidance of parks, monuments and wildlife refuges by 2,000 ft AGL with the exception of LATN areas and MTRs. LATN areas would not be utilized for the A-29 training beddown. The Proposed Action would abide by the restrictions set forth in a Moody AFB Record of Decision for the Winnersville Range and avoid flights under 1,500 feet AGL over the Banks Lake NWR. VR-1004 passes over the northern portion of the Okefenokee NWR where infrequent flights would occur. Species response to noise is not only species-specific and individualistic,

but also depends on sound level, rate of onset, number of events, and relative level of background noise (Prater et al. 2009). Low altitude flights are often more disruptive to wildlife in terrain with little vegetation cover (Manci et al. 1988). No impact to species in this area is expected since the loudest noise level in  $L_{max}$  would be less (88 dB) than the current noise exposure (114 dB) in the MTR from current A-10 activities (see **Section 4.2.1.2**). Species in this area have been previously exposed to overflights, the flights in the MTR are infrequent and the noise levels lower in these narrow corridors, and the vegetated terrain would help decrease the visual perception of the aircraft that often is additive to a species' response. Therefore, impacts to avian species in these areas from the Proposed Action would be minimal.

The three federally-listed species occurring on Moody AFB (wood stork, gopher tortoise, and eastern indigo snake) are not likely to be affected by the overflights since the species in the area currently experience similar training exercises. Roost protection for wood storks (buffer zone) implemented by the installation would continue to ensure minimal disturbance to roosting species including bald eagles. Habitat management for gopher tortoises has included prescribed burning which is also an important management tool for maintaining wetlands within the Grand Bay-Banks Lake complex. The Grand Bay Banks Council, a cooperative stewardship between Moody AFB and other state and federal agencies, provides for management of prescribed burning on state and federal lands. The Proposed Action would not impact the coordination or the use of prescribed burning as a management tool. Further, no ground disturbance, habitat modifications or potential impacts to water quality would occur; therefore, the USAF anticipates that these species would not be affected by the Proposed Action.

Considering the nature of the proposed uses of the project airspace, no adverse impacts are anticipated for the sensitive mammals, reptiles, amphibians, fish, invertebrates, or plant species listed in **Table 3.6-1** or their associated habitats that may occur under the MOAs for the Proposed Action. Protected marine species, such as the shortnosed sturgeon, sea turtles, manatee, and right whale, are under the jurisdiction of the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries). MOAs proposed for use by the A-29s do not extend over the marine environment, which is the primary habitat for the reptile and mammalian species. In addition, although river systems that may potentially contain the anadromous shortnosed sturgeon occur under the Coastal MOAs, no impacts to water quality would occur under the Proposed Action. Since the Proposed Action does not occur over marine environments, nor would it impact river systems, impacts to these species are not expected and informal consultation with NOAA Fisheries was not conducted based on a conversation with the agency on 23 June 2014. Sensitive wildlife species may exhibit a temporary response (such as assuming an alert posture) to a low-level overflight; however, it is very unlikely that such a response would adversely affect the survival or fecundity of the affected individual or population or approach the level of "take" as defined in the ESA from the Proposed Action. Avian species that occur in the ROI have been exposed to past and ongoing military overflights similar to the Proposed Action. Moody AFB aircraft routinely conduct low-altitude flights in the areas of Grand Bay Range, Moody 2 North MOA, Moody 2 South MOA, and Townsend Range. Baseline noise exposure from aircraft and ordnance use within the ROI has not resulted in reports of significant negative impacts on any wildlife species, including listed species. Although the Townsend Range and Coastal MOAs 1 and 2 occur over counties where the red knot and piping plover are listed, the Range and MOAs do not include areas above the coastal region; therefore, impacts to these listed species, and the piping plover critical habitat, are not expected.

Critical habitat for several species occurs under the various MOAs for the Moody alternative. Habitat for the listed mussel species the Gulf moccasinshell (*Medionidus penicillatus*), purple bankclimber (*Elliptioideus sloatianus*), oval pigtoe (*Pleurobema pyriform*), and shinyrayed pocketbook (*Lampsilis*

*subangulata*) occurs under the Moody 3 MOA, and within Moody 1 MOA Saber and Thud work areas. Critical habitat for the flat three-ridge (*Amblema neislerii*) and the reticulated salamander (*Ambystoma bishop*) is also designated under the Moody 3 MOA. The Altamaha spinymussel (*Elliptio spinosa*) is listed in several coastal counties and critical habitat is designated under the Coastal 1 MOA East. Although the Atlantic right whale (*Eubalaena glacialis*) and the Ochlockonee moccasinshell (*Medionidus simpsonianus*) have critical habitat designated in several counties, the habitat does not lie below the airspace for the Proposed Action. Neither the Georgia rockcress (*Arabis georgiana*), a plant species, nor the Chipola slabshell (*Elliptio chipolaensis*), a mussel species, are listed in any of the counties under the MOAs; however, critical habitat for both species is designated in several counties. Habitat for the Chipola slabshell is designated under the Moody 3 MOA, and within Moody 1 MOA Saber and Thud work areas, but habitat for the Georgia rockcress lies outside the MOAs for the Proposed Action. Activities under the MOAs from the Proposed Action would not affect critical habitat for any of these species as no ground disturbance would occur to potentially impact habitat or water quality. For the reasons stated above, the USAF concluded that the effects related to the implementation of the Proposed Action may affect, but are not likely to adversely affect the federally-listed species. The USFWS concurred with this finding on June 5, 2014 (**Appendix A**). Follow-up consultation specifically for the MTRs was conducted, and the USFWS concurred with the USAF conclusion on July 11, 2014 that the use of MTRs may affect, but is not likely to adversely affect the federally-listed species (**Appendix A**).

Under the Moody AFB Proposed Action alternative, no impacts to vegetation or water quality would occur, therefore, impacts to state listed mammals, herpetofauna, fish, and invertebrate are not expected to occur (**Table 3.6.2**). Bald eagle roost sites are protected by Moody AFB with a buffer zone and seasonally-restricted access (1-mile laterally and 1,500 feet above-ground level from September 15 through June 1) for areas within the installation and ranges thus reducing impacts from training activities. Preferred sandy beach habitat for the gull bill terns and Wilson's plovers occur along the Georgia coast, however, neither the Coastal MOAs nor the Townsend Range extends over the preferred habitat. Impacts to these species from the Proposed Action would not occur.

#### **4.6.2 Alternative B: Mountain Home AFB**

The Proposed Action would involve minor internal modification of facilities to meet the operational and maintenance requirements for the proposed beddown of the LAS A-29, but these modifications would not result in any ground disturbance. Wildlife species on Mountain Home AFB are primarily common or ubiquitous to the area and adapted to the human environment and noise, and would therefore, not experience an adverse population impact due to implementation of the project. Although waterfowl use the storage lagoons at Mountain Home AFB, the installation has a very low incident of bird-aircraft strikes. BASH is evaluated daily by Flight Safety to determine the level of risk each morning and evening by identifying bird locations and counting the number of birds (Mountain Home AFB 2012c). Managing the habitat, awareness of nesting species on the installation, and implementation of the Mountain Home BASH plan allows for a diversity of avian species while reducing BASH issues and maintaining compliance with the MBTA (Mountain Home AFB 2012c). The Proposed Action, while likely to slightly increase the potential for BASH-related issues, is not likely to affect avian populations. In addition, there are no known federally-listed threatened, endangered, proposed, or candidate species or their suitable habitats on Mountain Home AFB; therefore, no adverse impacts to federally listed species are anticipated from implementation of the Proposed Action.

Several federally-listed species potentially occur under the airspace. Aquatic habitat for the bull trout (*Salvelinus confluentus*) and the desert dace (*Eremichthys acros*) would not be impacted from the Proposed Action as there are no construction projects to potentially impact water quality. Critical habitat for the desert dace lies outside the Paradise South MOA. No impacts to spotted frogs or their habitat would occur as a result of the Proposed Action as ground disturbance would not occur. Subalpine forested habitat for the Canada lynx and wolverine do not occur below the MOAs and therefore no impacts to these species from the increase in sorties due to the Proposed Action is expected.

The A-29 LAS military training activities would only use BDU-33 ordnance at Juniper Butte Range and would adhere to all conservation measures to avoid or minimize impacts to slickspot peppergrass and its habitat as described in the Mountain Home AFB April 27, 2010 Slickspot Peppergrass Biological Opinion for Juniper Butte Range (USFWS 2010a) and the 2012 Mountain Home AFB INRMP (Mountain Home AFB 2012c). The Air Force and USFWS have concluded that the A-29 LAS military training proposal is consistent with the existing consultation addressing effects of ongoing military training actions on slickspot peppergrass and its amendment to include the 2012 Mountain Home AFB INRMP (USFWS 2014d). Effects of these military training activities and associated support activities (including ordnance removal, facilities maintenance, and fire suppression) are described within the Biological Opinion on the effects of US Air Force ongoing actions at Juniper Butte Range and in Owyhee County, Idaho on the slickspot peppergrass (USFWS 2010a, Mountain Home AFB 2012c). Mountain Home AFB, including Juniper Butte Range, has been excluded from proposed critical habitat, and no critical habitat for slickspot peppergrass has been designated at this time; therefore, none would be affected (USFWS 2010a, 2014d).

Greater sage grouse are a sagebrush obligate species located under some of the MOAs for the Proposed Action. Threats to this species are mainly due to reduction of preferred habitat. The Proposed Action would not impact sagebrush habitat and, therefore, no impacts to the greater sage grouse are expected. Introduction of the A-29 aircraft would represent a minimal departure from existing conditions and slight changes in the acoustic environment with single event noise levels ( $L_{max}$ ) from the A-29 lower than aircraft currently using the MTRs at low-altitudes (see **Section 4.2.2.2**), and would not be expected to affect the yellow-billed cuckoo adversely. Its preferred habitat of thick, riparian canopy cover would be expected to minimize or eliminate any visual appearance of an overflying aircraft. The potential for a bird-aircraft strike for both species is so low as to be discountable. The USFWS concurred with this finding that the Proposed Action is consistent with the existing Section 7 consultation for military training activities at Mountain Home AFB on 17 April 2014 (**Appendix A**). In addition, USFWS also agreed on 13 June 2014 that Section 7 consultation was not required for activities within the MTRs (**Appendix A**).

State-listed species living beneath airspace units would not experience a change in the number of loud overflight noise events per day as the A-29 aircraft is quieter than jets. In addition, A-29 airspace activity would mainly occur between 7,000 and 22,000 ft MSL which in the Mountain Home airspaces is approximately 4,000 ft AGL. This altitude is not likely to affect ground dwelling listed species. Impacts to the four bat species listed as special status species in Idaho are not expected to occur as behavioral response to infrequent low-altitude overflights would be insignificant and the potential for a bat-aircraft strike is so low as to be discountable.

Long-billed curlew and burrowing owl are found near the flightline as well as under the airspace for the Proposed Action. Disturbance of the nesting species is not expected to occur under the Proposed Action as these species are already adapted to the noise and activity around the flightline. Adverse impacts to the other state listed avian species would not occur as infrequent low-altitude overflights are limited to certain

airspace. Bald eagles only winter along the Snake River, (Mountain Home AFB 2012c) and would not be impacted by the Proposed Action as the ranges and training areas occur south of the Snake River. Aircraft would fly per AFI 11-202 Vol 3 *General Flight Rules* which includes avoidance of parks, monuments and wildlife refuges by 2,000 ft AGL unless part of LATN areas (which would not be utilized for the A-29 training beddown); therefore, impacts to raptor species at the Snake River Birds of Prey National Conservation Area are not expected.

#### **4.6.3 Alternative C: Shaw AFB**

As with the other installations considered for the Proposed Action, species that occur in the ROI have been exposed to past and ongoing military overflights similar to the Proposed Action. Shaw AFB aircraft routinely conduct low-altitude flights in the areas of Poinsett Range, and Gamecock C and I MOAs. Single event noise levels for the A-29 would be lower than current aircraft at Shaw AFB and the change in noise exposure for the MOAs and Ranges from the Proposed Action is <1 dBA (see **Section 4.2.3.2**). Baseline noise exposure from aircraft and ordnance use within the ROI has not resulted in reports of significant negative impacts on any wildlife species, including listed species. No additional supersonic flights would occur as a result of the Proposed Action.

The number of sorties per year is expected to increase by approximately 3,132. Waterfowl, protected under the Migratory Bird Treaty Act, are the biggest concern on Shaw AFB for potential hazards to flying operations. With additional sorties planned under the Proposed Action the potential for bird-aircraft strikes may increase slightly; however, Shaw AFB has developed and implemented a BASH plan to minimize potential issues from migrating waterfowl. In addition, no bald eagle nests are known to occur on Shaw AFB or the Poinsett Range.

Avian species that occur under the airspace have been exposed to past and ongoing military overflights similar to the Proposed Action. The federally-listed red-cockaded woodpecker occurs on the Poinsett Range; however, there would be no ground disturbance or habitat modifications occurring as part of the Proposed Action that might affect the red-cockaded woodpecker or its habitat. Long term monitoring of red-cockaded woodpeckers demonstrated that infrequent, short-duration military training exercises, as measured, did not appear to substantially impact red-cockaded woodpecker reproductive success and productivity (Delaney et al. 2011). The wood stork is listed in several counties occurring under the Gamecock B-D MOAs. The majority of the airspace under these MOAs is above 10,000 ft MSL which is considerably higher than where the majority of the bird strikes occur thus reducing the potential for impacts to listed avian species. In addition, although Gamecock B MOA occurs over Georgetown County where the red knot, Kirtland's warbler, and piping plover are listed, the MOA does not include areas above the coastal region and therefore impacts to these listed species are not expected. Critical habitat for the piping plover occurs along the South Carolina coast and would not be affected by the Proposed Action as it occurs outside of the airspace.

Habitat for federally protected species occurs under the airspace in several counties for the Proposed Action. Due to the nature of the actions proposed within the airspace, no impacts to plant, fish, marine, and invertebrate species are expected to occur because the proposed activities would not result in ground disturbance or potential impacts to water quality. In addition, the Gamecock B MOA does not extend over marine habitat; therefore, impacts to the listed sea turtle are not expected. Although river systems that may potentially contain the anadromous shortnosed sturgeon occur under some of the Gamecock airspaces, no impacts to water quality would occur under the Proposed Action and no impacts to the

sturgeon are expected. Consultation with NOAA Fisheries was not initiated since species under their jurisdiction would not be affected by the Proposed Action. The Proposed Action would also not affect critical habitat listed for the Carolina heelsplitter as no ground disturbance would occur in these counties. Additionally, impacts to the frosted salamander and Waccamaw silverside and their critical habitat would not occur as the Proposed Action does not include ground disturbance and the airspace does not occur over the critical habitat for these species. For these reasons, the Air Force has concluded that implementation of the AAF A-29 LAS Training Beddown Proposed Action is not likely to adversely affect federally listed species occurring within Sumter and the other counties occurring under the airspace. The USFWS agreed with this conclusion in a letter dated 9 June 2014 (**Appendix A**). The use of MTRs under the Proposed Action for Shaw AFB has previously been consulted on with the USFWS. While startle responses by some species may occur in the MTRs, flights in these narrow corridors are infrequent and the noise level is less than that produced by current aircraft operating in the MTRs; therefore, adverse impacts to wildlife species are not expected (see **Section 4.2.3.2**).

Since the Proposed Action would not result in any ground disturbance, state-listed aquatic and ground-dwelling species would not be impacted by the action. The three state listed avian species (the bald eagle was discussed previously) the American swallow-tailed kite, Wilson's plovers, and least tern, typically prefer the coastal habitat outside of the MOAs. No demolition or construction of buildings would occur under the Proposed Action to potentially affect the roosting sites for the Rafinesque's big-eared bat.

#### **4.6.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative the LAS training program and A-29 aircraft would not be bedded down at any USAF base or ANG installation. An increase in the number or sorties would not occur under this alternative and therefore, the increased risk to listed species and wildlife from increased noise and potential BASH incidence would not occur.

### **4.7 CULTURAL RESOURCES**

Adverse effects to protected cultural resources may result from any activities that compromise the integrity of the resources. For buildings and structures an adverse effect is an undertaking that diminishes the integrity of a property's location, design, setting, materials, workmanship, feeling, or association, or in other words, damages the qualities of the historic property that make it eligible for listing in the NRHP. An adverse effect can occur through the destruction or alteration of the property, isolation from or alteration of the environment, introduction of intrusive elements (visual, audible, or atmospheric), neglect, and the transfer, lease or sale of the property. Under 36 CFR Part 800, historic properties are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP." For the purpose of these regulations this term includes artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the National Register" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP-listing criteria. For archaeological sites, the main source of adverse effects is ground-disturbing activities that may destroy or alter beyond useful recovery known and unknown deposits of artifacts.

#### **4.7.1 Alternative A (Preferred Alternative): Moody AFB**

No COA for the implementation of the Proposed Action at Moody AFB includes the use of a facility determined to be eligible for or listed on the NRHP. The Proposed Action does not include any construction, ground disturbing activities, or external renovation to buildings proposed for use under this alternative. No adverse effect is anticipated to arise from the installation of communications lines, which is the only proposed building modification. In response to the USAF consultation letter dated 26 June 2014, the Historic Preservation Division of the Georgia Department of Natural Resources responded on 13 August 2014 stating they concurred that the Proposed Action would have no effect on properties listed or eligible for listing on the NRHP (**Appendix A**).

Current range management plans that protect known cultural resources at the ranges would remain in effect and apply to all LAS training activities.

American Indian tribes were invited to comment on potential impacts to traditional cultural resources as a result of the Proposed Action during the preparation of this EA. Initial letters were sent to tribal leaders on 2 May 2014, and corresponding follow-up letters were sent after 30 days with no response. Phone calls were made to tribes who had yet to respond three weeks after follow-up letters were sent. The Alabama-Quassarte Tribal Town Creek Nation of Indians, Oklahoma indicated by phone on 5 June 2014 that they have no interest in the region. The Cherokee Nation stated by phone on 30 June 2014 that they had no concerns as long as there is no ground disturbing activity. The Alabama Coushatta Tribe of Texas stated by phone on 1 June 2014 that they had no concerns with the Proposed Action.

The following tribes responded by email indicating no concern with the Proposed Action: The United Keetowah Band of Cherokee Indians (6 July 2014) and The Caddo Nation (30 June 2014). These responses can be found in **Appendix A**. No responses were received from the other tribes contacted.

No significant impact to any cultural resource is reasonably expected to result from the implementation of the Proposed Action at Moody AFB.

#### **4.7.2 Alternative B: Mountain Home AFB**

All three COAs at Mountain Home AFB propose the use of an NRHP-eligible historic property. Building 211 would house program elements under COA 2 and 3, and Hangar 1331 would be used in COA 1. The Proposed Action does not require ground disturbance, construction, or external renovation to those buildings should they be used. No adverse effect is anticipated to arise from the installation of communications lines. In response to the USAF consultation letter dated 20 July 2014, the Idaho State Historical Society replied on 11 August 2014 indicating they had no concerns with the Proposed Action and issued a determination of No Adverse Effect to Historic Properties (**Appendix A**).

Current range management plans that protect known cultural resources at the ranges would remain in effect and apply to all LAS training activities.

American Indian tribes were invited to comment on potential impacts to traditional cultural resources as a result of the Proposed Action during the preparation of this EA. Initial letters were sent to tribal leaders on 28 April 2014, and corresponding follow-up letters were sent after 30 days with no response. Phone calls were made to tribes who had yet to respond three weeks after follow-up letters were sent. No



responses were received from the tribes contacted. Further details on the tribal consultations performed in relation to this project at Mountain Home AFB can be found in **Appendix A**.

No significant impact to any cultural resource is reasonably expected to result from the implementation of the Proposed Action at Mountain Home AFB.

#### **4.7.3 Alternative C: Shaw AFB**

COA 1 at Shaw AFB would house LAS training mission elements in Building 611, an NRHP-eligible historic resource. The potential use of Building 611 does not require ground disturbance, construction, or external renovation should it be used. No adverse effect is anticipated to arise from the installation of communications lines.

Installation of communications lines to Building 611 may be required, but adverse impacts to any feature contributing to its historic significance are not foreseeable. In response to the USAF consultation letter dated 20 July 2014, the South Carolina Archives and History Center issued a concurrence letter on 31 July 2014 with a determination of No Adverse Effect (**Appendix A**). COA 2 does not call for the use of any facility determined to be historically significant.

Current range management plans that protect existing cultural resources at the ranges would remain in effect and apply to all LAS training activities.

American Indian tribes were invited to comment on potential impacts to traditional cultural resources as a result of the Proposed Action during the preparation of this EA. Initial letters were sent to tribal leaders on 6 May 2014, and corresponding follow-up letters were sent after 30 days with no response. Phone calls were made to tribes who had yet to respond three weeks after follow-up letters were sent. The Catawba Indian Nation indicated by email on 20 May 2014 and by letter 18 August 2014 (**Appendix A**), as well as by phone on 11 June 2014, that they have no concerns with the Proposed Action as long as there would be no ground or archaeological site disturbing activity. No responses were received from the other tribes contacted.

No significant impact to any cultural resource is reasonably expected to result from the implementation of the Proposed Action at Shaw AFB.

#### **4.7.4 Alternative D: No-Action Alternative**

Under the No-Action Alternative, the A-29 LAS training mission would not be bedded down at any USAF installation, and there would be no impacts attributable to the Proposed Action to any cultural resource.

### **4.8 SOCIOECONOMIC RESOURCES (HOUSING & SCHOOLS)**

This section utilizes data described in **Section 3.8** to analyze housing availability and school capacity in the ROIs (the installation and surrounding cities and counties) for each of the alternative locations.

The following methods are used to analyze housing availability and school capacity associated with implementation of the Proposed Action:

- ◆ **Unaccompanied Housing:** With implementation of the Proposed Action, a maximum of 45 AAF trainees would be in training at any given time. Therefore, analysis of the availability of unaccompanied housing for AAF trainees examines each installation's capacity to house 45 AAF trainees.
- ◆ **Privatized Housing:** An estimated 81 privatized housing units would be required to house the USAF permanent supporting personnel and their dependents. It is assumed that USAF personnel and their dependents would first utilize the privatized housing option, even though they have the option to live in vicinity area housing if they choose to do so. If the alternative location does not have 81 units to house all USAF personnel through the privatized housing option, then the analysis subtracts 81 (the number of units needed to house USAF and their dependents) from the total of vacant privatized housing units, and looks to vicinity area housing in order to house remaining USAF personnel unable to utilize the privatized housing option. In sum, this analysis looks to both privatized and vicinity area housing availability if the alternative location does not have the capacity to house all 81 USAF personnel and their dependents in base privatized housing.
- ◆ **Vicinity Area Housing:** In order to house the approximately 45 contractors, this analysis reviews the availability of housing units in the vicinity of each of the three alternatives. If USAF personnel are required to live in vicinity area housing (as described above), the sum of USAF personnel needing to live off-base and the approximate 45 contractors is analyzed.

This analysis also assumes that none of the approximately 45 contractors or USAF permanent supporting personnel would buy a house as a result of implementation of the Proposed Action; instead they would choose to rent when living in areas in the vicinity of the installation.

- ◆ **School Capacity:** This analysis assumes that dependents of the USAF permanent supporting personnel (up to 180) are school aged children and would be evenly distributed among each grade within each school district in the ROI. Since available data did not describe current capacity rates of each school or school district (e.g., how much under or over capacity), this analysis utilizes percentage increases in order to assess the ability of the schools in the ROIs to accommodate the redistribution of additional children into the school system.

#### **4.8.1 Alternative A (Preferred Alternative): Moody AFB**

##### **4.8.1.1 Housing**

As shown in **Table 4.8-1**, Moody AFB has sufficient housing for AAF trainees by having 99 vacant units to house the 45 AAF trainees. Additionally as discussed in **Section 3.8.1.1**, AAF trainees would be housed in Building 580 (with 76 rooms) for this alternative, which would not require the displacement of any USAF or other personnel as none are currently residing in this building.

However, the base does not have sufficient housing to accommodate all 81 USAF personnel and their dependents. The base currently has 39 vacant privatized housing units, requiring 42 USAF personnel to look for housing in the ROI's vicinity area housing.

**Table 4.8-1. Moody AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units	Needed
Unaccompanied Housing (for AAF Trainees)	748	649	99	45
Privatized Housing (for USAF Personnel)	377	338	39	81

As such, approximately 45 contractors and 42 USAF personnel would need to find an estimated 87 housing units in the area (**Table 4.8-2**).

**Table 4.8-2. Moody AFB – Vicinity Area Housing**

Geography	Vacant Units	
	Available for Rent	Needed
City of Valdosta	1,172	42
Lowndes County	1,774	(for USAF personnel due to lack of base privatized housing)
Lanier County	238	45
		(for Contractors)
<b>Total</b>	<b>3,184</b>	<b>87</b>

As shown, there are approximately 3,184 units available for rent, with an estimated total of 87 units required to house all contractors and the 42 USAF personnel unable to live in privatized housing at Moody AFB.

Therefore, the Moody AFB alternative would have sufficient housing for all 45 AAF trainees, 81 USAF personnel (and their dependents), and approximately 45 contractors.

#### 4.8.1.2 Schools

For the Moody AFB alternative, there are a total of 19,548 students attending kindergarten through 12th grade in the ROI's public schools. The addition of approximately 180 students to the ROI would result in a 0.92 percent increase in the student population (**Table 4.8-3**).

**Table 4.8-3. Moody AFB – Public School Enrollment**

	Number of Students in ROI			Additional	Percent Increase
	Valdosta City School District	Lowndes County School District	Lanier County School District		
<b>Total</b>	7,610	10,113	1,825	<b>180</b>	<b>0.92%</b>
	<b>19,548</b>				

Therefore, potential impacts associated with the redistribution of students in the ROI resulting from implementation of the Proposed Action would be negligible.

## 4.8.2 Alternative B: Mountain Home AFB

### 4.8.2.1 Housing

As shown in **Table 4.8-4**, Mountain Home AFB has sufficient housing for AAF trainees by having 148 vacant units to house the 45 AAF trainees. Additionally, the base has indicated that Building 2425, which was slated for deactivation, is available to house the AAF trainees. The building has a total of 80 units with 27 currently occupied, leaving 53 vacant units to house all 45 AAF trainees.

However, the base does not have sufficient housing to accommodate all 81 USAF personnel and their dependents. The base currently has 54 vacant privatized housing units, requiring 27 of the 81 USAF personnel to look for housing in the ROI's.

**Table 4.8-4. Mountain Home AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units	Needed
Unaccompanied Housing (for AAF Trainees)	679	531	148	45
Privatized Housing (for USAF Personnel)	844	790	54	81

As such, approximately 45 contractors and 27 USAF personnel would need to find an estimated 72 housing units in the area. **Table 4.8-5** outlines housing units in the vicinity of Mountain Home AFB.

**Table 4.8-5. Mountain Home AFB – Vicinity Area Housing**

Geography	Vacant Units	
	Available for Rent	Needed
City of Mountain Home	288	27 (for USAF personnel due to lack of base privatized housing)
Elmore County	564	45 (for Contractors)
<b>Total</b>	<b>852</b>	<b>72</b>

As shown, there are approximately 852 units available for rent, with a total of 72 units required to house all contractors and the 27 USAF personnel unable to live in privatized housing at Mountain Home AFB.

Therefore, the Mountain Home AFB alternative would have sufficient housing for all 45 AAF trainees, 81 USAF personnel (and their dependents), and approximately 45 contractors.

#### 4.8.2.2 Schools

For the Mountain Home AFB alternative, there are a total of 4,575 students attending kindergarten through 12th grade in the ROI's public schools. The addition of approximately 180 students to the ROI would result in a 3.9 percent increase in the student population (**Table 4.8-6**).

**Table 4.8-6. Mountain Home AFB – Public School Enrollment**

	Number of Students in ROI	Additional	Percent Increase
	Mountain Home School District 193		
<b>Total</b>	<b>4,575</b>	<b>180</b>	<b>3.9%</b>

Therefore, potential impacts associated with the redistribution of students in the ROI resulting from implementation of the Proposed Action would be negligible.

### 4.8.3 Alternative C: Shaw AFB

#### 4.8.3.1 Housing

As shown in **Table 4.8-7**, Shaw AFB does not have sufficient housing for all AAF trainees by having only 39 vacant units to house the 45 AAF trainees, leaving six units needed to fulfill the requirement to house all 45 AAF trainees. Additionally, the base has indicated that on-base housing options are limited.

In order to house all 45 AAF trainees on Shaw AFB, unaccompanied housing residents would have to transfer into off-base residences, at an estimated cost of approximately \$450,000 per year.

As shown in **Table 4.8-7**, Shaw AFB does have sufficient housing to accommodate all 81 permanent USAF personnel and their dependents. The base currently has 106 vacant privatized housing units.

**Table 4.8-7. Shaw AFB – Base Housing**

Housing Characteristic	Total Units	Occupied Units	Vacant Units	Needed
Unaccompanied Housing (for AAF Trainees)	712	673	39	45
Privatized Housing (for USAF Personnel)	481	375	106	81

As such, only the approximately 45 contractors would need to be housed in vicinity area housing units. **Table 4.8-8** outlines housing availability in the vicinity of Shaw AFB.

**Table 4.8-8. Shaw AFB – Vicinity Area Housing**

Geography	Vacant Units	
	Available for Rent	Needed
City of Sumter	847	45 (for Contractors)
Sumter County	1,556	
<b>Total</b>	<b>2,403</b>	<b>45</b>

As shown, there are approximately 2,403 units available for rent, with 45 total units required.

Therefore, the Shaw AFB alternative would have sufficient housing for all 81 USAF personnel (and their dependents), and approximately 45 contractors. However, this alternative currently would not meet the requirement to house all 45 AAF trainees in base unaccompanied housing.

#### 4.8.3.2 Schools

For the Shaw AFB alternative, there are a total of 16,941 students attending kindergarten through 12th grade in the ROI's public schools. The addition of approximately 180 students to the ROI would result in a 1.1 percent increase in the student population (**Table 4.8-9**).

**Table 4.8-9. Shaw AFB – Public School Enrollment**

	Number of Students in ROI	Additional	Percent Increase
	Sumter School District		
<b>Total</b>	<b>16,941</b>	<b>180</b>	<b>1.1%</b>

Therefore, potential impacts associated with the redistribution of students in the ROI resulting from implementation of the Proposed Action would be negligible.

#### 4.8.4 Alternative D: No-Action Alternative

With implementation of the No-Action Alternative, there would be no changes to housing availability and school capacities in any of the alternative locations.

## **4.9 INFRASTRUCTURE/UTILITIES**

Adverse impacts to infrastructure/utilities may occur if an alternative would result in an adverse effect to the services provided, such as exceeding the capacity of the existing utility. Adverse impacts on infrastructure are evaluated based on an alternatives potential to disrupt the utility or change the level of service for liquid fuels and communications; or violate an approved utility plan.

### **4.9.1 Alternative A (Preferred Alternative): Moody AFB**

#### **4.9.1.1 Liquid Fuel Supply**

Implementing the Proposed Action at Moody AFB would not result in adverse impacts to bulk fuel storage or the distribution of Jet-A Fuel. The base has indicated there is sufficient fuel capacity to support current missions in addition to the Proposed Action. Moody's total fuel storage capacity of 1,279,795 gallons is sufficient to support the A-29 training mission and its current missions (Moody 2014).

#### **4.9.1.2 Communications Systems**

The existing inside plant and outside plant communications infrastructure at Moody AFB is sufficient to support the A-29 training mission and the associated contractor private network requirements. Range communications are sufficient, and frequency requirements are either available, or can be acquired within the standup timeline (Moody 2014).

### **4.9.2 Alternative B: Mountain Home AFB**

#### **4.9.2.1 Liquid Fuel Supply**

Total bulk fuel storage capacity at Mountain Home AFB is 4.5 million gallons, which is sufficient to support implementing the Proposed Action at Mountain Home AFB. Implementation of the Proposed Action would result in no adverse impacts to bulk fuel storage or Jet-A Fuel distribution at Mountain Home AFB (Mountain Home 2014).

#### **4.9.2.2 Communications Systems**

Range communications are sufficient to support the A-29 training mission at Mountain Home AFB, and frequency requirements are available or can be acquired within the standup timeline. Inside plant and outside plant communications infrastructure is fully capable of supporting the network requirements of the A-29 training mission (Mountain Home 2014).

### **4.9.3 Alternative C: Shaw AFB**

#### **4.9.3.1 Liquid Fuel Supply**

The base has indicated there is sufficient fuel capacity to support current missions in addition to the Proposed Action. Total bulk fuel storage capacity at Shaw AFB is 1.5 million gallons, which is sufficient to support implementing the Proposed Action at Shaw AFB. Implementation of the Proposed Action would result in no adverse impacts to bulk fuel storage or Jet-A Fuel distribution at Shaw AFB (Shaw AFB 2014b).

#### **4.9.3.2 Communications Systems**

Communications inside and outside plant infrastructure is sufficient to support the A-29 training mission if the Proposed Action were to be implemented at Shaw AFB. There are sufficient range communications and frequency requirements are available or can be acquired within the standup timeline (Shaw AFB 2014b).

#### **4.9.4 Alternative D: No-Action Alternative**

##### **4.9.4.1 Liquid Fuel Supply**

Under the No-Action Alternative, the Proposed Action would not occur at any of these installations. Therefore, the No-Action Alternative would result in no impacts to liquid fuel supply at any of the proposed installations.

##### **4.9.4.2 Communications Systems**

Under the No-Action Alternative, the Proposed Action would not occur at any of these installations. Therefore, there would be no impacts to the existing communications system at any of the proposed installations.

### **4.10 OTHER NEPA CONSIDERATIONS**

#### **4.10.1 Unavoidable Adverse Effects**

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 of CFR §1508.27 specifies that a determination of significance requires consideration of context and intensity. The LAS Training Beddown would not impact the ROIs at any of the Proposed Action locations: Moody AFB, Mountain Home AFB, or Shaw AFB. As described in the preceding resource-specific analyses, no unavoidable adverse impacts are expected from the Proposed Action.

#### **4.10.2 Relationship of Short-Term Uses and Long-Term Productivity**

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects.

The purpose of the Proposed Action is to provide training to AAF pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft at a suitable CONUS location. The Proposed Action would utilize existing facilities; no construction is required, thereby minimizing the potential for impacts to productivity.

#### **4.10.3 Irreversible and Irretrievable Commitments of Resources**

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. The short-



term irreversible commitments of resources that would occur would include planning and engineering costs, building materials and supplies and their cost, use of energy resources during addition of communication equipment, and labor. No long-term irretrievable commitments of resources would result.

## 5.0 CUMULATIVE IMPACTS

This EA also considers the effects of cumulative impacts as required in 40 CFR 1508.7 and concurrent actions as required in 40 CFR 1508.25[1]. A cumulative impact, as defined by the CEQ (40 CFR 1508.7) is the "...impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

A list of past, present, and reasonably foreseeable actions within the ROIs at the three alternative locations that could result in cumulative impacts with implementation of this project's Proposed Action are shown in **Section 5.10, Table 5.10-1, Table 5.10-2,** and **Table 5.10-3** respectively for Moody AFB, Mountain Home AFB, and Shaw AFB.

For this EA analysis, these other actions listed in the tables are addressed from a cumulative perspective and are analyzed in this section. The future actions would be evaluated under separate NEPA documentation conducted by the appropriate involved federal agency. Based on the best available information for these proposals by others, the USAF cumulative impact analysis does consider them.

Descriptions of the cumulative impacts for the resource areas considered in this EA follow.

### 5.1 AIRSPACE AND RANGE MANAGEMENT

#### **Alternative A (Preferred Alternative): Moody AFB**

There are five actions on **Table 5.10-1** that have the potential to cumulatively impact airspace management at Moody AFB (actions 2, 5, 7, 8 and 9); one past action, one present action, and three future actions. The Proposed Action would result in a 45.9 percent increase to baseline operations at Moody AFB's airfield.

While there would be cumulative impacts to airspace management at Moody AFB as a result of the Proposed Action in combination with past, present, and reasonably foreseeable future actions, these impacts would not be significant. Actions from past projects, such as the EA for Expansion of Off-Base Helicopter Landing Zone, are included in the baseline data presented in Chapter 3. Only the proposed future Bemiss Field ULZ project would increase airfield operations at Moody AFB. The A-10 Drawdown, if approved, would significantly decrease airfield operations at Moody AFB by retiring the entire A-10 fleet. No other project that could potentially impact airspace management at Moody AFB would include an increase in operations. Due to the staggered timing of these airfield operations increases, as well as the existing airfield and surrounding airspace availability, any cumulative impacts resulting from the implementation of the Proposed Action at Moody AFB would not be significant.

### **Alternative B: Mountain Home AFB**

Two actions on **Table 5.10-2** have the potential to cumulatively impact airspace management at Mountain Home AFB (actions 2 and 3), both of which were past actions. The Proposed Action would result in a 53.5 percent increase in operations from the baseline at Mountain Home's airfield.

The Republic of Singapore Air Force F-15SG Beddown EA, completed in 2009, is the only project that involved an increase in airfield operations at Mountain Home AFB. The increase in operations associated with this action was included in the baseline operations data presented in **Chapter 3**; no present or reasonably foreseeable future actions at Mountain Home AFB would affect airspace management. While total operations at Mountain Home AFB would increase, the installation does not currently have any scheduling issues for the airfield or surrounding airspace. Mountain Home AFB's control tower would be fully capable of handling the increased operations associated with the A-29 training mission within their airfield and airspace.

### **Alternative C: Shaw AFB**

As illustrated in **Table 5.10-3**, the Airspace Training Initiative EIS completed at Shaw AFB in 2011 is the only past, present, or reasonably foreseeable future action that would impact airspace management in conjunction with the Proposed Action. The Proposed Action would result in a 37 percent increase over baseline operations at Shaw AFB's airfield.

Since the Airspace Training Initiative EIS and its associated actions were included in the baseline presented in **Chapter 3**, implementation of the Proposed Action would not result in cumulative impacts to airspace management at Shaw AFB.

## **5.2 NOISE**

### **Alternative A (Preferred Alternative): Moody AFB**

Ten actions on **Table 5.10-1** have the potential to result in cumulative noise impacts at Moody AFB (actions 1, 2, 3, 5, 6, 7, 8, 10, 11, and 12). Implementing the Proposed Action would slightly expand the noise contours from airfield operations.

While there would be cumulative impacts to noise at Moody AFB as a result of the Proposed Action in combination with past, present, and reasonably foreseeable future actions, these impacts would not be significant. Actions from past projects were included in the baseline presented in **Chapter 3**. Four of these actions, the ongoing Military Family Housing Privatization Initiative, as well as the planned Northeast Training Project, South Airfield Area Development and Capital Improvements project would only have temporary noise impacts resulting from associated construction activities. As these actions are not located in the same area on the base, the temporary noise impacts would not likely result in a cumulative impact. Potential noise impacts associated with increasing flight activity at Moody AFB would only occur as a result of either the ongoing Personnel Recovery Campus action or planned Bemiss Field ULZ action; the A-10 Drawdown action, if approved, would significantly decrease noise impacts associated with flight activity at Moody AFB. Since only two of these actions increase airfield operations, and many of the others would be temporary in nature, cumulative impacts resulting from the implementation of the Proposed Action would not be significant.

### **Alternative B: Mountain Home AFB**

Four actions on **Table 5.10-2** have the potential to cumulatively impact noise at Mountain Home AFB (actions 2, 3, 4, and 5). Implementing the Proposed Action would only slightly expand the baseline noise contours from airfield operations.

Cumulative impacts resulting from the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Mountain Home AFB would not be significant. The Republic of Singapore Air Force F-15SG Beddown is the only other project that increased flight activity as a result of the Proposed Action, and that increase was accounted for in the baseline operations data presented in **Chapter 3**. The ongoing Military Family Housing Privatization Initiative action and the planned Gateway West Transmission Line project would result in temporary noise impacts associated with construction. Given that the operations increase associated with the Singapore F-15SG Beddown were included in the baseline presented in **Chapter 3** and other projects added airspace or would only result in temporary impacts, cumulative impacts at Mountain Home AFB would be not be significant.

### **Alternative C: Shaw AFB**

All actions on **Table 5.10-3** have the potential to result in cumulative noise impacts at Shaw AFB. Implementing the Proposed Action would slightly expand the baseline noise contours from airfield operations.

Cumulative impacts resulting from the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Shaw AFB would not be significant. The only project that would impact noise contours as a result of flight activity is the Airspace Training Initiative EIS completed in 2011; this flight activity was included in the baseline noise contours for Shaw AFB presented in **Chapter 3**. All other actions listed on **Table 5.10-3** would only impact noise at Shaw AFB as a result of construction, which would be temporary and only last the duration of the project. Therefore, cumulative impacts at Shaw AFB would not be significant.

## **5.3 AIR QUALITY**

### **Alternative A (Preferred Alternative): Moody AFB**

Five actions listed on **Table 5.10-1** have the potential to cumulatively impact air quality at Moody AFB (actions 1, 5, 6, 7, and 8). Emissions would increase slightly for the duration of the Proposed Action, after which emissions would return to baseline conditions. Emissions generated during the Proposed Action would be minimal and would not change the Lanier and Lowndes Counties AQCR attainment status.

Cumulative impacts associated with the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions would not be significant. Past emissions from the EA for Grand Bay Range, Bemiss Field, and Moody Explosive Ordnance Disposal Range Operations completed in 2013 were captured in the baseline data presented in **Chapter 3**. Emissions from the planned Personnel Recovery Campus action, as well as portions of the Bemiss Field ULZ action, would be created during construction activities associated with the action and would be temporary. While emissions from aircraft operations would increase slightly as a result of the Bemiss Field ULZ action and

this Proposed Action, the A-10 drawdown action, if approved, would have the potential to significantly decrease aircraft emissions at Moody AFB. Therefore, cumulative impacts would not be significant.

#### **Alternative B: Mountain Home AFB**

All actions listed on **Table 5.10-2** have the potential to cumulatively impact air quality at Mountain Home AFB. Emissions would increase slightly for the duration of the Proposed Action, after which emissions would return to baseline conditions. Emissions generated during the Proposed Action would be minimal and would not change the Elmore County AQCR attainment status.

Cumulative impacts resulting from the implementation of the Proposed Action at Mountain Home AFB in conjunction with past, present, and reasonably foreseeable future actions would not be significant. Three past actions impacted air quality at Mountain Home AFB, the Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range, the Republic of Singapore Air Force F-15SG Beddown, and the Paradise MOA Expansion. Impacts to air quality resulting from these actions were included in the baseline data presented in **Chapter 3**. The Military Family Housing Privatization Initiative and the planned Gateway West Transmission Line action would only cause temporary impacts to air quality resulting from the associated construction. Therefore, cumulative impacts to air quality at Mountain Home AFB would not be significant.

#### **Alternative C: Shaw AFB**

Three actions listed on **Table 5.10-3** have the potential to cumulatively impact air quality at Shaw AFB (actions 1, 3, and 4). Emissions would increase slightly for the duration of the Proposed Action, after which emissions would return to baseline conditions. Emissions generated during the Proposed Action would be minimal and would not change the Sumter County AQCR attainment status.

Cumulative impacts on air quality at Shaw AFB as a result of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions would not be significant. Any impacts to air quality as a result of the 2011 Airspace Training Initiative were included in the baseline data presented in **Chapter 3**. Both planned Capital Improvements actions would result in only temporary impacts to air quality for the duration of the associated construction. Therefore, cumulative impacts to air quality at Shaw AFB would not be significant.

### **5.4 SAFETY AND OCCUPATIONAL HEALTH**

#### **Alternative A (Preferred Alternative): Moody AFB**

Eight actions on **Table 5.10-1** have the potential to cumulatively impact safety and occupational health at Moody AFB (actions 1, 2, 4, 5, 7, 8, 9, and 10). Risk of Class A mishaps and bird/wildlife strikes would increase slightly as a result of the Proposed Action. Plans and programs implemented by the USAF and Moody AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks during the execution of the Proposed Action.

Cumulative impacts to safety and occupational health as a result of the Proposed Action in conjunction with the past, present, and reasonably foreseeable future actions would not be significant. Impacts to safety and occupational health resulting from past projects have been included in the baseline data presented in **Chapter 3**. Four of these actions would result in improvements to safety at Moody AFB.

The Expansion of Off-Base Helicopter Landing Zones action, the Airfield Improvements action, and the Bemiss Field Unimproved Landing Zone action propose actions to improve safety at Moody AFB, and the A-10 Drawdown action, if approved, would have the potential to decrease Class A mishaps and bird/wildlife strikes. Therefore, cumulative impacts from the Proposed Action would not be significant.

#### **Alternative B: Mountain Home AFB**

There are no actions on **Table 5.10-2** that have the potential to cumulatively impact safety and occupational health at Mountain Home AFB. Risk of Class A mishaps and bird/wildlife strikes would increase slightly as a result of the Proposed Action. Plans and programs implemented by the USAF and Mountain Home AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks during the execution of the Proposed Action. Therefore, there would be no cumulative impacts from the Proposed Action.

#### **Alternative C: Shaw AFB**

Two actions on **Table 5.10-3** have the potential to cumulatively impact safety and occupational health at Shaw AFB (actions 1 and 4). Plans and programs implemented by the USAF and Shaw AFB to manage risks to personnel safety associated with ground and flight operations would continue to minimize those risks during the execution of the Proposed Action. Risk of Class A mishaps and bird/wildlife strikes would increase slightly as a result of the Proposed Action.

Cumulative impacts resulting from the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Shaw AFB would not be significant. The 2011 Airspace Training Initiative slightly increased the potential for Class A mishap and bird/wildlife strike at Shaw; however this action has been captured in the baseline data presented in **Chapter 3**. The planned Capital Improvements action would only result in temporary impacts to safety and occupational health for the duration of construction. Therefore, cumulative impacts to safety and occupational health at Shaw AFB would not be significant.

## **5.5 HAZARDOUS MATERIALS / WASTE**

#### **Alternative A (Preferred Alternative): Moody AFB**

Six actions on **Table 5.10-1** have the potential to cumulatively impact hazardous materials/waste at Moody AFB (actions 3, 6, 7, 10, 11, and 12). There would be no significant changes to the quantities of hazardous wastes generated at Moody AFB, and any additional waste generation or handling areas that are established due to the Proposed Action would be managed in accordance with the installation's Hazardous Waste Management Plan.

Cumulative impacts as a result of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Moody AFB would not be significant. Five of the actions on **Table 5.10-1** would only include construction wastes which would occur temporarily for the duration of the associated construction. The A-10 Drawdown, if approved, would decrease the amount of hazardous waste generated at Moody AFB. Therefore, cumulative impacts to hazardous materials/wastes would not be significant at Moody AFB.

### **Alternative B: Mountain Home AFB**

Three actions on **Table 5.10-2** have the potential to cumulatively impact hazardous materials/waste at Mountain Home AFB (actions 1, 2, and 4). There would be no significant changes to the quantities of hazardous wastes generated at Mountain Home AFB, and any additional waste generation or handling areas that are established due to the Proposed Action would be managed in accordance with the installation's Hazardous Waste Management Plan.

Cumulative impacts resulting from the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Mountain Home AFB would not be significant. Hazardous materials/waste generated by the Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range and the Republic of Singapore Air Force F-15SG Beddown are already being handled in accordance with Mountain Home's Hazardous Waste Management Plan and were incorporated in the baseline data presented in **Chapter 3**. The ongoing Military Family Housing Privatization Initiative will only include construction waste and would only occur during the associated construction. Therefore, cumulative impacts to hazardous materials/wastes would not be significant.

### **Alternative C: Shaw AFB**

Three actions on **Table 5.10-3** have the potential to cumulatively impact hazardous materials/waste at Shaw AFB (actions 2, 3, and 4). There would be no significant changes to the quantities of hazardous wastes generated at Shaw AFB, and any additional waste generation or handling areas that are established due to the Proposed Action would be managed in accordance with the installation's Hazardous Waste Management Plan.

Cumulative impacts resulting from the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Shaw AFB would not be significant. All actions that would include construction wastes would only do so temporarily. Therefore, cumulative impacts to hazardous materials/wastes would not be significant.

## **5.6 BIOLOGICAL / NATURAL RESOURCES**

### **Alternative A (Preferred Alternative): Moody AFB**

Seven actions on **Table 5.10-1** have the potential to cumulatively impact biological and natural resources at Moody AFB (actions 3, 4, 5, 6, 8, 10, and 11). While the potential for BASH-related issues would increase slightly as a result of implementing the Proposed Action, Moody's implementation of a BASH plan would minimize this potential. Previous and ongoing exposure of wildlife to other aircraft would result in no adverse impact to wildlife as a result of this Proposed Action.

Although several present and future actions identified for Moody AFB have the potential to impact wildlife due to disturbance from construction, no ground disturbance would occur under the Proposed Action and, therefore, cumulative impacts on the installation's wildlife would not occur. However, considered cumulatively, planned installation development activities, airfield improvements, and increased sorties could have the potential for short-term, minor, adverse impacts on migratory bird species such as the wood stork. Wood storks use trees within wetland areas and the removal of the wetlands coupled with the improvements around the runways (wetland removal and tree removal) may temporarily



displace migrating birds. Strict adherence to the roost buffer zone and temporal separation of the actions would reduce potential adverse cumulative impacts caused in the short-term by increased A-29 sorties and other planned low altitude actions in the area. In the long-term, cumulative impacts would not occur to migratory bird species as airfield improvements provide beneficial impacts through the reduction of potential BASH issues and birds settle into other available habitat. Other sensitive species occurring on Moody AFB and under the MOA would not be cumulatively impacted by the Proposed Action when considered with other proposed actions.

#### **Alternative B: Mountain Home AFB**

Three actions on **Table 5.10-2** have the potential to cumulatively impact biological and natural resources at Mountain Home AFB (actions 1, 3, and 5). While the potential for BASH-related issues would increase slightly as a result of implementing the Proposed Action, the previous and ongoing exposure of wildlife to other aircraft would result in no adverse impact to wildlife as a result of this Proposed Action. Further, there are no known federally-listed threatened, endangered, proposed or candidate species or their suitable habitat at Mountain Home AFB.

Overall, cumulative impacts of implementation of the Proposed Action and other past, present, and reasonably foreseeable actions at Mountain Home AFB on the biological resources would be insignificant. Any impacts to biological resources resulting from past projects are incorporated in the baseline data presented in **Chapter 3**. No ground disturbance or disturbance to vegetation would occur under the Proposed Action; therefore, cumulative impacts to vegetation with past actions would not occur. Several alternatives for the Gateway West Transmission Line actions are proposed to traverse the area near the Snake River Birds of Prey National Conservation Area. Transmission lines pose potential threats to migrating raptor species, especially bald eagles. However, with implementation of avian power line protection guidelines as well the AFI 11-202 Vol 3 *General Flight Rules*, measures to minimize the potential for impacts to migratory birds would be implemented and cumulative impacts are minimized. The Proposed Action uses established MOAs, which includes the expanded Paradise MOA for high altitude usage. Although A-29 aircraft usage of the airspace when combined with other current actions may increase potential BASH issues, cumulative impacts to migratory bird species are not expected to be significant due to implementation of Mountain Home AFB's BASH plan. No cumulative impacts on threatened and endangered species or their critical habitat would occur.

#### **Alternative C: Shaw AFB**

Two actions on **Table 5.10-3** have the potential to cumulatively impact biological and natural resources at Shaw AFB (actions 1 and 2). While the potential for BASH-related issues would increase slightly as a result of implementing the Proposed Action, the previous and ongoing exposure of wildlife to other aircraft would result in no adverse impact to wildlife as a result of this Proposed Action. Further, Shaw AFB has developed and implemented a BASH plan to minimize potential issues from migrating waterfowl. No bald eagle nests are known to occur on Shaw AFB or at Poinsett Range.

Present and future actions for Shaw AFB include mainly construction actions on the installation, while any impacts to biological resources resulting from past actions have been included in the baseline presented in **Chapter 3**. Most of these construction actions would occur within the main base area where current activities and land use limit the potential to encounter wildlife, sensitive species, and natural areas. The Proposed Action, in conjunction with the other base construction actions, would not cumulatively

impact wildlife and sensitive species. No construction is proposed under the Proposed Action therefore cumulative impacts to state listed species on the installation are not also expected. No federally-listed species occur on the installation. The Proposed Action would not change previously established airspace usage or create new airspace as past projects have; only increase the number of sorties. No cumulative impacts to biological resources from airspace usage would occur.

## **5.7 CULTURAL RESOURCES**

### **Alternative A (Preferred Alternative): Moody AFB**

There are no actions on **Table 5.10-1** that would impact cultural resources at Moody AFB. Therefore, cumulative impacts resulting from the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Moody AFB would not be significant. The Proposed Action does not include any construction or ground disturbing activity, and current range management plans that protect known cultural resources will remain in effect for the duration of the Proposed Action. Compliance with Section 106 of the NHPA, including SHPO and Native American consultation to identify any known archaeological/historic resources would be accomplished prior to implementation of any action at Moody AFB.

### **Alternative B: Mountain Home AFB**

There is one action on **Table 5.10-2** that has the potential to impact cultural resources at Mountain Home AFB (action 1); however, this is a past action and the resultant impacts are included in the baseline presented in **Chapter 3**. While NRHP-eligible historic properties at Mountain Home AFB would be used in any of the three developed COAs, the Proposed Action does not include any construction or ground disturbing activity, and the addition of communications lines inside the buildings would be the only modification made to NRHP-eligible properties.

Cumulative impacts to cultural resources would not be significant under the Proposed Action and from past, present, and reasonably foreseeable actions at Mountain Home AFB. Current range management plans that protect existing cultural resources will remain in effect throughout the duration of the Proposed Action. Compliance with Section 106 of the NHPA, including SHPO and Native American consultation to identify any known archaeological/historic resources would be accomplished prior to implementation of any action at Mountain Home AFB.

### **Alternative C: Shaw AFB**

There are no actions on **Table 5.10-3** that have the potential to impact cultural resources at Shaw AFB. One NRHP-eligible property could be used under one of the developed COAs for the Proposed Action. No construction or ground disturbing activity would occur at Shaw AFB as a result of the Proposed Action, and the addition of communications lines inside the buildings would be the only modification made to the NRHP-eligible property.

Cumulative impacts to cultural resources would not be significant under the Proposed Action and from past, present, and reasonably foreseeable actions at Shaw AFB. Compliance with Section 106 of the NHPA, including SHPO and Native American consultation to identify any known archaeological/historic resources would be accomplished prior to implementation of any action at Shaw AFB, and current range management plans that protect existing cultural resources will remain in effect throughout the duration of the Proposed Action.

## **5.8 SOCIOECONOMIC RESOURCES (HOUSING & SCHOOLS)**

### **Alternative A (Preferred Alternative): Moody AFB**

Three actions on **Table 5.10-1** have the potential to cumulatively impact socioeconomic resources at Moody AFB (actions 3, 7, and 11). Moody AFB has sufficient housing for the AAF trainees, but insufficient housing for the USAF personnel and USAF dependents associated with the Proposed Action. Increases in student enrollment as a result of the Proposed Action would be less than 1 percent in the ROI over a 4-year period.

Cumulative impacts to socioeconomic resources resulting from the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Moody AFB would not be significant. Moody AFB is currently considering the development of new privatized military housing under the Military Family Housing Privatization Initiative, including analyzing consequences associated with development of privatized housing units located on Moody AFB and in nearby Valdosta, GA. As no other past, present or reasonably foreseeable future actions at Moody AFB include an increase in on-base personnel, cumulative impacts to housing would not result from implementation of the Proposed Action.

### **Alternative B: Mountain Home AFB**

One action on **Table 5.10-2** has the potential to cumulatively impact socioeconomic resources at Mountain Home AFB (action 4). Mountain Home AFB has sufficient housing for the AAF trainees, but insufficient housing for the USAF personnel and USAF dependents associated with the Proposed Action. Increases in student enrollment as a result of the Proposed Action would be less than 4 percent in the ROI over a 4-year period.

Cumulative impacts to socioeconomic resources at Mountain Home AFB as a result of the Proposed Action and past, present, and reasonably foreseeable future actions would not be significant. The Military Family Housing Privatization Initiative analyzes consequences associated with demolishing old housing units, constructing new housing units, and conveying the remaining housing units to a private developer. Since no other past, present, or reasonably foreseeable future action at Mountain Home AFB would involve an increase in on-base personnel, cumulative impacts resulting from the Proposed Action at Mountain Home AFB would not be significant.

### **Alternative C: Shaw AFB**

One action on **Table 5.10-3** has the potential to cumulatively impact socioeconomic resources at Shaw AFB (action 2). Shaw AFB does not have sufficient housing for the AAF trainees, but does have housing for the USAF personnel and USAF dependents associated with the Proposed Action. Increases in student enrollment as a result of the Proposed Action would be just over 1 percent in the ROI over a 4-year period.

Cumulative impacts to socioeconomic resources at Shaw AFB as a result of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions would not be significant. The ongoing Military Family Housing Privatization Initiative involves developing additional privatized housing for families at Shaw AFB. As no other past, present or reasonably foreseeable future action at Shaw AFB include an increase in on-base personnel, cumulative impacts to housing would not result from implementation of the Proposed Action.

## **5.9 INFRASTRUCTURE/UTILITIES**

### **Alternative A (Preferred Alternative): Moody AFB**

There are four actions on **Table 5.10-1** that have the potential to cumulatively impact infrastructure and utilities at Moody AFB (actions 3, 6, 12 and 13). The Proposed Action would only impact the liquid fuel supply and communications systems. Moody AFBs bulk fuel storage capacity of 1,279,795 gallons is sufficient to support the Proposed Action in addition to current fuel usage, and the communications system is either sufficient to support the Proposed Action or the appropriate modifications can be made within the stand-up timeline.

Cumulative impacts to infrastructure and utilities as a result of implementing the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions at Moody AFB would not be significant. None of the four actions on **Table 5.10-1** would impact liquid fuel supply, and the Personnel Recovery Campus would be the only action that may require communications systems modifications. Due to the spacing of these actions, cumulative impacts to infrastructure and utilities at Moody AFB would not be significant.

### **Alternative B: Mountain Home AFB**

Two actions on **Table 5.10-2** have the potential to cumulatively impact infrastructure and utilities at Mountain Home AFB (actions 2 and 4). The Proposed Action would only impact the liquid fuel supply and communications systems. Mountain Home AFBs bulk fuel storage capacity of 4.5 million gallons is sufficient to support the Proposed Action in addition to current fuel usage, and the communications system is either sufficient to support the Proposed Action or the appropriate modifications can be made within the stand-up timeline.

Cumulative impacts to infrastructure and utilities resulting from the implementation of the Proposed Action at Mountain Home AFB in conjunction with past, present, and reasonably foreseeable future actions would not be significant.

### **Alternative C: Shaw AFB**

Three actions on **Table 5.10-3** have the potential to cumulatively impact infrastructure and utilities at Shaw AFB (actions 2, 3, and 4). The Proposed Action would only impact the liquid fuel supply and communications systems. Shaw AFBs bulk fuel storage capacity of 1.5 million gallons is sufficient to support the Proposed Action in addition to current fuel usage, and the communications system is either sufficient to support the Proposed Action or the appropriate modifications can be made within the stand-up timeline.

Cumulative impacts resulting from the implementation of the Proposed Action in conjunction with past, present, and reasonably foreseeable future actions on infrastructure and utilities at Shaw AFB would not be significant. None of the actions on **Table 5.10-3** would impact liquid fuel supply at Shaw AFB, and either of the Capital Improvements actions may require minor communications system modifications in association with those proposed actions. As a result, cumulative impacts would not be significant.

## **5.10 PROJECTS CONSIDERED FOR CUMULATIVE IMPACTS**

A list of past, present, and reasonably foreseeable actions within the ROIs at the three alternative locations that could result in cumulative impacts with implementation of this project's Proposed Action are shown below in **Table 5.10-1**, **Table 5.10-2**, and **Table 5.10-3**.

**Table 5.10-1. Moody AFB – Actions Considered under Cumulative Impacts**

Action #	Action	Proponent/Location	Timeframe	Description	Resource Interaction*
1	Grand Bay Range, Bemiss Field, and Moody Explosive Ordnance Disposal Range Operations EA	USAF/Moody AFB, Grand Bay Range, Bemiss Field	Past	Increased ordnance use for air-to-ground training for the 23rd Fighter Group, 41st Rescue Squadron (RQS), and 71 RQS, along with extending Grand Bay Range operating hours to support expanded ground-based training as needed.	Safety and Occupational Health, Air Quality, Noise
2	Expansion of Off-base Helicopter Landing Zones EA	USAF/Private land parcels in Echols and Lanier County	Past	Established 8 new helicopter landing zones, 3 in Echols County and 5 in Lanier County. The activities involve helicopter landings, ground troop training, and flyovers by helicopters and fixed-wing aircraft. The land areas for the helicopter landing zones are privately owned and are utilized by the Air Force under lease agreements with the respective owners. There would be no increase in aircraft operations.	Airspace Management, Safety and Occupational Health, Noise
3	Military Family Housing Privatization Initiative EA	USAF/Moody AFB and a parcel of land in Valdosta, GA	Present	Involves developing privatized military family housing at Moody AFB. It includes the development of 11 housing units within a 15-acre parcel located on Moody AFB, and 90 housing units within approximately 60 acres of a 113-acre parcel in nearby Valdosta, GA. The project includes additional utility connections, increased impervious surfaces, natural buffers, recreational facilities, and the filling of several acres of wetlands.	Socioeconomics, Infrastructure/Utilities, Biological/Natural Resources, Hazardous Materials and Waste, Noise
4	Airfield Improvements EA	USAF/Moody AFB	Present	This action involves tree-clearing activities and conversion of wetland areas around the southeastern side of the airfield to airfield grass at Moody AFB to meet safety criteria for airfield design, reduce obstructions on the airfield, increase safety for pilots, and reduce BASH risks. Approximately 97 acres of trees will be removed and 62 acres, 31 of which are wetlands, will be converted to airfield grass.	Biological/Natural Resources, Safety and Occupational Health

**Table 5.10-1 Moody AFB – Actions Considered under Cumulative Impacts (continued)**

Action #	Action	Proponent/Location	Timeframe	Description	Resource Interaction*
5	Lower Pattern Altitude EA	USAF/Airspace immediately surrounding Moody AFB	Present	This project changes the Moody AFB A-10 VFR overhead flight pattern from 2,000 feet AGL to 1,500 feet in the airspace immediately surrounding the Moody AFB airfield, and does not affect IFR overhead flight patterns.	Airspace Management, Safety and Occupational Health, Air Quality, Biological/Natural Resources, Noise
6	Draft Proposed Personnel Recovery Campus EA	USAF/Moody AFB and private land adjacent to the northern boundary	Present and future	Construction of facilities for the Combat Search and Rescue training program infrastructure. The project would expand the boundary of the installation to the north, would require the closure of a 1-mile segment of Hightower Road, the conversion of 87 acres of open space and trails to aircraft maintenance and operation, and the filling of 10 acres of wetlands. It also involves the construction of 6 related buildings, a 4-bay hangar, helicopter parking, some of which are currently under construction.	Biological/Natural Resources, Hazardous Materials and Waste, Noise, Air Quality, Infrastructure/Utilities
7	A-10 Drawdown	USAF/Moody AFB	Future	The USAF is discussing drawing down and retiring the entire fleet of A-10s over the next 2-5 years, which would remove all A-10s from Moody AFB if approved.	Airspace Management, Safety and Occupational Health, Air Quality, Noise, Socioeconomics, Hazardous Materials and Waste
8	Bemiss Field ULZ project	USAF/Moody AFB	Future	The action includes tree clearing around the runways, heavy weight drops, and increasing aircraft operations.	Airspace Management, Safety and Occupational Health, Air Quality, Biological/Natural Resources, Noise
9	Changes to Grand Bay Range	USAF/Grand Bay Range	Future	Involves changing Grand Bay Range from visual flight rules to visual flight rules-instrument flight rules.	Airspace Management, Safety and Occupational Health
10	Northeast Training Complex	USAF/Moody AFB	Future	Training complex for Air Force Security Forces' utilization of Counter-Improvised Explosive Device (C-IED) Training Lanes. This action would move the training site to a more suitable location from its current location on the north edge of Moody AFB.	Biological/Natural Resources, Safety and Occupational Health, Hazardous Materials and Waste, Noise

**Table 5.10-1 Moody AFB – Actions Considered under Cumulative Impacts (continued)**

Action #	Action	Proponent/Location	Timeframe	Description	Resource Interaction*
11	South Airfield Area Development	USAF/Moody AFB	Future	This conceptual plan would create a consolidated campus for the South Airfield that integrates new and existing facilities, pedestrian and vehicle circulation, parking and roads, and gathering spaces into the surrounding built and natural environment.	Noise, Socioeconomics, Hazardous Materials and Waste, Biological/Natural Resources
12	Capital Projects on-base	USAF/Moody AFB	Future	Projects include the renovation of the Airman's dining facility in Building 571; 23 Fighter Group parking for Building 706; building maintenance projects including new roofs, exterior paint, interior renovations, utility repairs, and building demolitions; and road and airfield maintenance projects including paving, rubber removal, and restriping	Hazardous Materials and Waste, Noise, Infrastructure/Utilities
13	Water/Waste Water Treatment Partnering Initiative	Moody AFB and Lowndes County	Future	Public-Public/Public-Private (P4) Water/Waste Water Treatment Partnering Initiative with Lowndes County to meet future water and wastewater demands.	Infrastructure/Utilities

\*Only includes resources that were analyzed as part of this Proposed Action



**Table 5.10-2. Mountain Home AFB – Actions Considered under Cumulative Impacts**

Action #	Action	Proponent/Location	Timeframe	Description	Resource Interaction*
1	Employment of the 2.75-Inch Rocket at Saylor Creek Air Force Range EA	USAF/Mountain Home AFB	Past	A variety of munitions and training ordnance were implemented on Saylor Creek Air Force Range to support the Combat Search and Rescue mission of the Idaho Air National Guard and the Idaho Army National Guard stationed at Gowen Field, Boise, Idaho.	Air Quality, Biological/Natural Resources, Cultural Resources
2	Republic of Singapore Air Force F-15SG Beddown	USAF/Mountain Home AFB	Past	The Republic of Singapore Air Force F-15SG Beddown occurred in 2009, which brought 10 aircraft and 210 pilots and support staff to the installation.	Airspace Management, Noise, Air Quality, Infrastructure/Utilities, Hazardous Materials and Waste
3	Paradise MOA Expansion	USAF/Paradise MOA	Past	Extended the eastern boundary of the Paradise MOA in Nevada and Oregon to the east, and lowered the floor altitude from 14,500 feet MSL to 10,000 feet MSL or 3,000 feet AGL, whichever is higher. These changes resulted in additional high-altitude Air Traffic Control Assigned Airspace (ATCAA) and lower altitude MOA airspace, which provided substantially more training airspace for aircraft between 18,000 and 50,000 feet MSL.	Airspace Management, Noise, Air Quality, Biological/Natural Resources
4	Military Family Housing Privatization Initiative EA	USAF/Mountain Home AFB	Present	Involves developing privatized military family housing at Mountain Home AFB. A total of 359 housing units will be demolished and 263 new units constructed over a six year period. The remaining 793 units will be conveyed to a private developer, which will manage them.	Infrastructure/Utilities, Noise, Air Quality, Hazardous Materials and Waste, Socioeconomics
5	Gateway West Transmission Line project	Private/Elmore County, Idaho	Future	This transmission line project may pass directly northeast of the town of Mountain Home.	Noise, Air Quality, Biological/Natural Resources

\*Only includes resources that were analyzed as part of this Proposed Action

**Table 5.10-3. Shaw AFB - Actions Considered under Cumulative Impacts**

Action #	Action	Proponent/Location	Timeframe	Description	Resource Interaction*
1	Airspace Training Initiative EIS	USAF/Shaw AFB	Past	Involved modifications to the airspace structure for Bulldog MOA in GA. It created new airspace, establishing additional locations for electronic training transmitters to increase the realism of pilot training, and implementing the use of chaff and flares in the new airspace.	Airspace Management, Safety and Occupational Health, Noise, Air Quality, Biological/Natural Resources
2	Military Family Housing Privatization Initiative	USAF/Shaw AFB	Present	Involves developing privatized military family housing at Shaw AFB.	Socioeconomics, Infrastructure/Utilities, Biological/Natural Resources, Hazardous Materials and Waste, Noise
3	Capital Improvements 2010	USAF/Shaw AFB	Present	Involves a number of facility and road construction, demolition and renovation projects including the replacement of the medical clinic and an addition to Building 1921. Construction of aircraft maintenance training facility (off-base to on-base), aircraft maintenance storage, expansion of munitions storage magazine, new arm/de-arm pad.	Infrastructure/Utilities, Hazardous Materials and Waste, Noise, Air Quality
4	Capital Improvements	USAF/Shaw AFB	Future	Construction of new facilities including: 6 Bay Flight Simulator, Parts Storage Facility, roadways and parking.	Infrastructure/Utilities, Safety and Occupational Health, Hazardous Materials and Waste, Noise, Air Quality

\*Only includes resources that were analyzed as part of this Proposed Action

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## Appendix A

### Interagency / Intergovernmental Coordination, Consultations, and Public Notifications

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**Moody AFB**

**Interagency / Intergovernmental Coordination**  
*Recipients and Example Letter*

The following stakeholders were notified of the preparation of this EA and their input solicited.

<b>Federal Agencies</b>	
Bureau of Indian Affairs - Eastern Region Mr. Franklin Keel, Regional Director 545 Marriott Dr. Suite 700 Nashville, TN 37214	U.S. Environmental Protection Agency - Region 4 Mr. Heinz Mueller, Chief NEPA Program Office 61 Forsyth St, SW Atlanta, GA 30303
Federal Aviation Administration - Southern Region Mr. Steve Brown, Director 1701 Columbia Ave. College Park, GA 30337	U.S. Forest Service - Southern Region Mr. Dave Harris, NEPA Coordinator 1720 Peachtree Rd. NW Atlanta, GA 30309
Okefenokee National Wildlife Refuge Mr. Michael Lusk, Refuge Manager Route 2, Box 3330 Folkston, GA 31537	Townsend Range Senior Master Sgt Brian Leverett P.O. Box 220 Townsend, GA 31331
<b>State Agencies</b>	
Georgia Department of Natural Resources Mr. Chris Bauman, Regional Supervisor 1773-A Bowen's Mill Hwy Fitzgerald, GA 31750	South Georgia Regional Commission Ms. Julia Shewchuk, Planning Director 327 W. Savannah Ave Valdosta, GA 31601
Georgia State Historic Preservation Office Ms. Jennifer Dixon, Deputy State Historic Preservation Officer 254 Washington Street SW, Ground Level Atlanta, GA 30334	
<b>Tribal Agencies</b>	
Alabama-Quassarte Tribal Town Creek Nations of Indians, Oklahoma Mr. Pere Bowlegs, Tribal Historic Preservation Officer P.O. Box 187 Wetumka, OK 74883	Poarch Band of Creek Indians Robert Thrower, Tribal Historic Preservation Officer 5811 Jack Springs Road Altmore, AL 36502
Caddo Nation Polly Edwards, Tribal Historic Preservation Officer P.O. Box 487 Binger, OK 73009	Seminole Tribe of Florida Allison Swing, Tribal Historic Preservation Officer 6300 Stirling Road Hollywood, FL 33024
The Cherokee Nation Dr. Richard L. Allen, Tribal Historic Preservation Officer P.O. Box 948 Tahlequah, OK 74465	Seminole Nation of Oklahoma Natalie Harjo, Tribal Historic Preservation Officer P.O. Box 1768 Seminole, OK 74884
Coushatta Tribe of Louisiana Linda Langley, Tribal Historic Preservation Officer P.O. Box 10 Elton, LA 70532	Thlopthlocco Tribal Town Charles Coleman, Tribal Historic Preservation Officer P.O. Box 188 Okemah, OK 75859

United Keetoowah Band of Cherokee Indians Lisa LaRue Baker, Tribal Historic Preservation Officer P.O. Box 746 Tahlequah, OK 74465	
<b>Other Stakeholders</b>	
The Honorable Sanford Bishop United States House of Representatives 2429 Rayburn HOB Washington, DC 20515	The Honorable Johnny Isakson United States Senate 1 Overton Park, 3625 Cumberland Blvd, Suite 9 Atlanta, GA 30339
The Honorable Ellis Black Georgia House of Representatives 5900 Jumping Gully Road Valdosta, GA 31601	The Honorable Jack Kingston United States House of Representatives 2372 Rayburn HOB Washington, D.C. 20515
The Honorable Saxby Chambliss United States Senate 416 Russell Senate Office Bldg Washington, DC 20515	Sheriff Nick Norton Lanier County Sherriff's Office 100 Main Street County Courthouse Lakeland, GA 31635
The Honorable Amy Carter Georgia House of Representatives P.O. Box 4930 Valdosta, GA 31604	The Honorable William Slaughter Chairman , Lowndes County Board of Commissioners 327 N. Ashley Street-3rd Floor Valdosta, GA 31601
Mr. Jason Davenport, County Planner Lowndes County Board of Commissioners 327 N. Ashley Street-3rd Floor Valdosta, GA 31601	The Honorable Jason Shaw Georgia House of Representatives 39 Valdosta Rd Lakeland, GA 31635
The Honorable Nathan Deal Governor of Georgia 206 Washington St., 111 State Capitol Atlanta, GA 30334	Mr. Albert Studstill Lanier County Administrator 100 Main Street County Courthouse Lakeland, GA 31635
The Honorable John Gayle Mayor of Valdosta 316 East Central Avenue Valdosta, GA 31601	Valdosta City Council P.O. Box 1125, 216 E. Central Ave. Valdosta, GA 31603
The Honorable Tim Golden Georgia Senate 110 Beacon Hill Valdosta, GA 31602	



**DEPARTMENT OF THE AIR FORCE**  
**AIR FORCE CIVIL ENGINEER CENTER**  
**JOINT BASE SAN ANTONIO LACKLAND TEXAS**

28 April 14

J. Dale Clark, P.E.  
Chief, AF NEPA Center (AFCEC/CZN)  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

Valdosta City Council  
P.O. Box 1125, 216 E. Central Ave.  
Valdosta, GA 31603

Dear Council Members

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be

used for this proposed action if Moody AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Moody AFB and the indicated range and airspace areas.

The LAS EA will assess the potential environmental impacts associated with bedding down the LAS training program at one of these three installations to conduct pilot and maintainer training operations. It will also examine the cumulative effects when combined with past, present, and any future proposals. As part of the Air Force's Environmental Impact Analysis Process (EIAP), we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act (NEPA) Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Renae Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Renae Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

Sincerely,

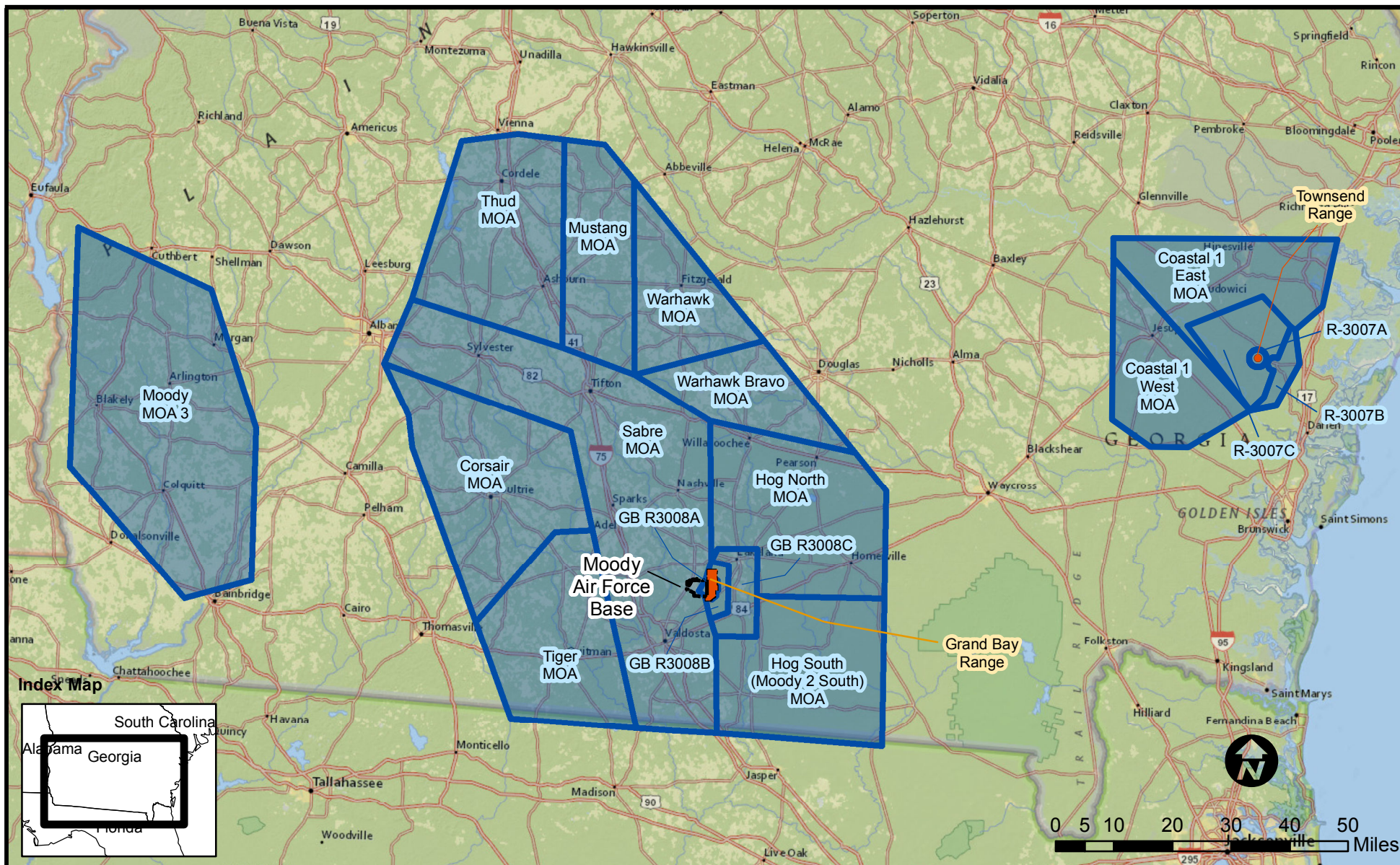


J. DALE CLARK, P.E.  
Chief, AF NEPA Center  
Environmental Directorate

Attachment:

Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Moody AFB





Moody Air Force Base: Proposed Airspaces and Ranges

#### Legend

- Moody Air Force Base
- Military Operations Area (MOA) Proposed for Beddown
- Ranges Proposed for Beddown





**DEPARTMENT OF THE AIR FORCE**  
**AIR FORCE CIVIL ENGINEER CENTER**  
**JOINT BASE SAN ANTONIO LACKLAND TEXAS**

26 June 14

J. Dale Clark, P.E.  
Chief, AF NEPA Center (AFCEC/CZN)  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

Georgia State Historic Preservation Office  
Ms. Jennifer Dixon, Deputy State Historic Preservation Officer  
254 Washington Street SW, Ground Level  
Atlanta, GA 30334

Dear Ms. Dixon

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

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program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in red), airspace (in dark blue), and Military Training Routes (MTRs) that would be used for this proposed action if Moody AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Moody AFB and the indicated range and airspace areas.

The LAS EA will assess the potential environmental impacts associated with bedding down the LAS training program at one of these three installations to conduct pilot and maintainer training operations. It will also examine the cumulative effects when combined with past, present, and any future proposals. As part of the Air Force's Environmental Impact Analysis Process (EIAP), we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act (NEPA) Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Renae Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Renae Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

Sincerely,

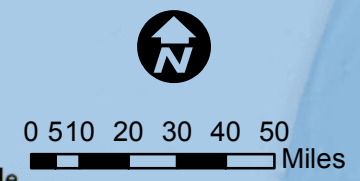
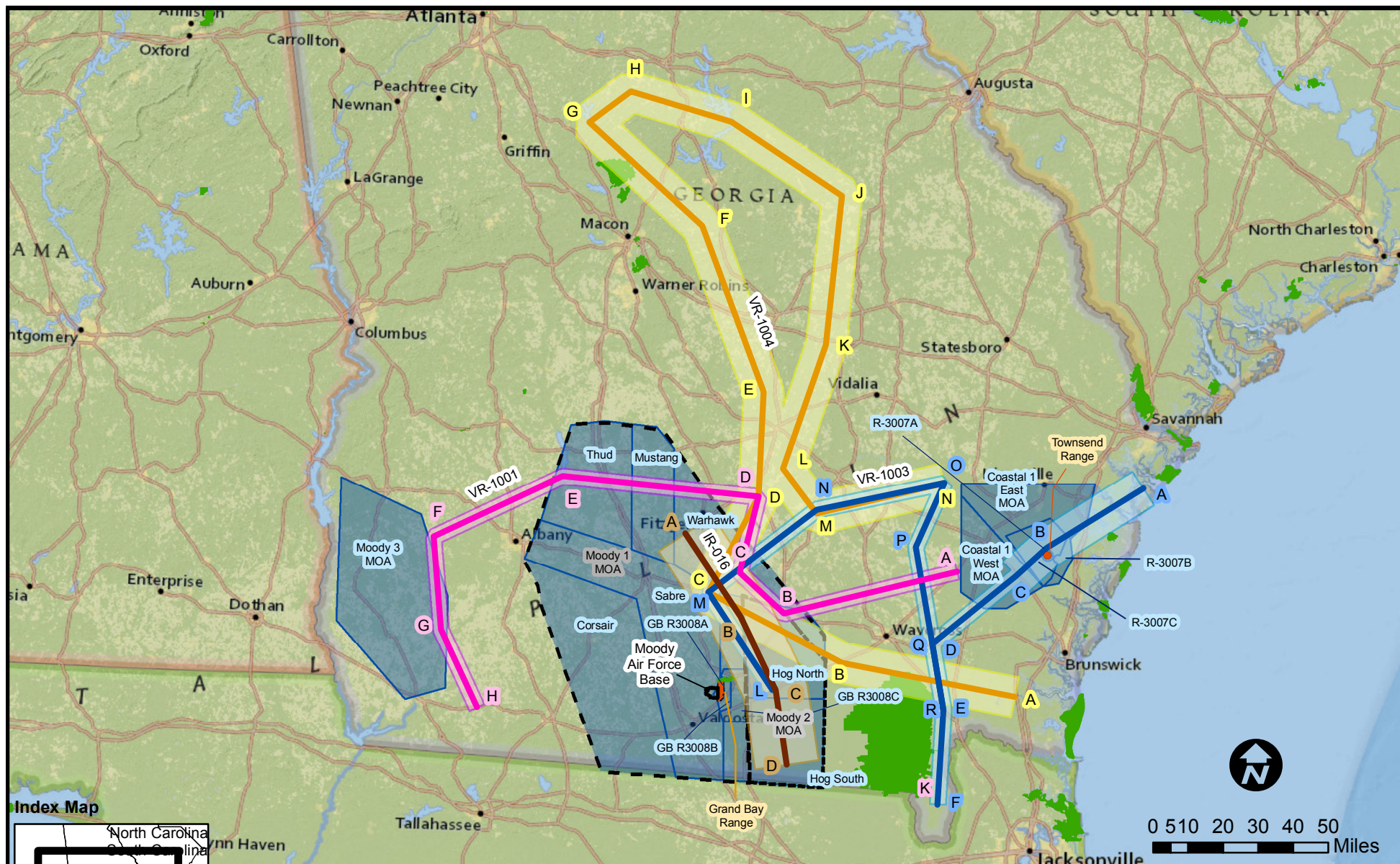


J DALE CLARK, P.E.  
Chief, AF NEPA Center  
Environmental Directorate

Attachment:

Map of Proposed MTRs, Airspace, and Ranges for the A-29 LAS Beddown at Moody AFB





### Military Training Route (MTR)

- |         |                     |
|---------|---------------------|
| IR-016  | IR-016 Route Width  |
| VR-1001 | VR-1001 Route Width |
| VR-1003 | VR-1003 Route Width |
| VR-1004 | VR-1004 Route Width |

### Legend

- Moody Air Force Base
- Ranges Proposed for Beddown
- Military Operations Area (MOA) Proposed for Beddown
- Moody 1 MOA
- Moody 2 MOA
- Route Segments of MTRs

Moody Air Force Base: Proposed MTRs, Airspace, and Ranges

**Moody AFB**

**Interagency / Intergovernmental Coordination**  
*Responses*

**From:** [Gissentanna, Larry](#)  
**To:** [FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN](#)  
**Cc:** [Mueller, Heinz](#); [Reichgott, Christine](#); [Buskey, Traci P.](#)  
**Subject:** A-29 Light Air Support (LAS) Training Program  
**Date:** Thursday, May 29, 2014 8:22:41 AM

---

Ms. Renae Fisher

Environmental Program Manager

Air Force Civil Engineer Center (AFCEC)

Bldg 171,2261 Hughes Ave, Ste 155

JBSA Lackland, TX 78236-9853

Dear Ms. Fisher,

Consistent with Section 102(2)(c) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) appreciates the opportunity to review the Intergovernmental and Interagency Coordination of Environmental Planning (IICEP) /(Scoping letter) dated April 28, 2014, for the proposed A-29 Light Air Support Training Program at Moody Air Force Base, Georgia ;Shaw Air Force Base, South Carolina and Mountain Home AFB, Idaho..

EPA understands that this proposed action is a temporary training program to occur between 2014 and 2019. Existing suitable USAF ranges will be utilized, along with existing airspace. The A-29 Aircraft will be equipped with inert munitions for range training. There will be no additional construction or demolition of buildings required for this proposed action. The draft Concept of Operation (CONOPS) study, conducted by the Air Force, has supported the additional personnel and equipment on these bases with minimal impacts.

EPA Region 4 has no additional comments at this time. Please provide a draft copy of the EA to both EPA Regions 4 and 10 for comment.

Thank you for the opportunity to comment, if you have any questions, you can reach me via the information below.

Larry O. Gissentanna

DoD and Federal Facilities, Project Manager

U.S. Environmental Protection Agency/ Region 4

National Environmental Policy Act (NEPA) Program Office

61 Forsyth Street, SW

Atlanta, GA 30303-8960

Office: 404-562-8248

[gissentanna.larry@epa.gov](mailto:gissentanna.larry@epa.gov)





John Gayle  
Mayor

## CITY of VALDOSTA, GEORGIA

May 27, 2014

Ms. Renae Fischer, Environmental Program Manager  
Air Force Civil Engineer Center (AFCEC)  
National Environmental Policy Act (NEPA) Center  
BLDG 171  
2261 Hughes Avenue, Ste. 155  
JBSA Lackland, TX 78236-9853

RE: ENVIRONMENTAL ASSESSMENT (EA) FOR PROPOSED A-29 LAS TRAINING  
PROGRAM BEDDOWN AT MOODY AFB

Dear Ms. Fischer,

We are in receipt of the letter from Dale Clark to the Mayor and City Council of the city of Valdosta dated April 28, 2014 concerning an Environmental Assessment for the proposed A-29 LAS training program and the possibility of this interim training program bedding down at Moody AFB.

First of all, there is no known potential environmental impacts or other concerns whatsoever that might negatively affect this assessment for Moody Air Force Base (AFB). The proposed beddown seems very consistent with the types of current missions, and also the previous missions that have been occurring at Moody. Our understanding is that both the aircraft to be used and the training mission itself is very similar to the T-6 training mission that has been successfully housed at Moody AFB in the past. Also, as part of the USAF's overall review and consideration of the three prospective air bases, please know and understand the very strong relationship that Moody AFB enjoys with our community. Since the base's beginning in 1941, it has always been a welcomed addition to our community. Moody AFB and the men and women who serve at Moody are an integral part of who we are and a major reason we have continued to prosper as a community. Valdosta and Moody enjoy the reputation as the finest example of base/community relations in the entire armed services. It is a reputation we are proud to have earned and work hard to keep.

For many years, Moody has been featured very prominently in our land use planning efforts with its own "Moody Activity Zone" (MAZ) that is included in our Comprehensive Plan as well as its own series of MAZ zoning districts. All of these are designed to protect Moody AFB from encroachment of incompatible uses. Moody is given priority consideration for all land use decisions that occur in this area of our community, and this is closely monitored by Moody personnel in conjunction with County and City planning and zoning staff. For over twenty years, the Moody AFB community planner has been given a permanent seat on our countywide planning commission and has even

P. O. Box 1125 • 216 E. Central Ave. • Valdosta, Georgia 31603 • (229) 259-3500 • FAX (229) 259-5411  
*An Equal Opportunity Employer*

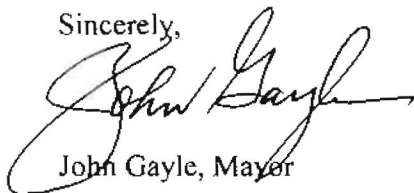


served as the Chairman at times. Each October, we celebrate national "Community Planning Month" together with Moody. City and County planning staff along with Moody personnel work together in planning a series of events during the month to highlight the importance of good community planning. These efforts have been recognized by the Georgia Chapter of the American Planning Association and we have even been nominated for a national planning award.

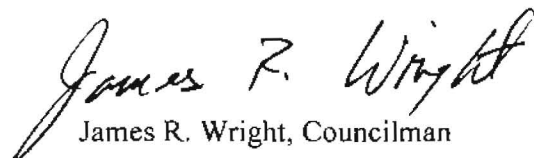
Yes, Moody is indeed a very important part of our community and we are proud to have them here. We wholeheartedly support their current mission, as well as this proposed beddown of the interim training program. We believe Moody AFB is the best location for the mission and we commit ourselves as leaders in the community to work in every way possible to make the mission a success. We stand ready to assist in any way possible and look forward to the announcement of Moody being selected as the host base for this mission.

If additional information is necessary, please feel free to contact City Manager Larry Hanson or Mayor John Gayle directly. Thank you for the opportunity to offer comments and thank you in advance for the selection of Moody AFB!

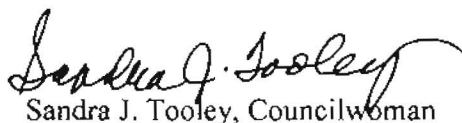
Sincerely,



John Gayle, Mayor



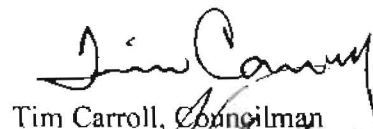
James R. Wright, Councilman



Sandra J. Tooley, Councilwoman



Ben Norton, Councilman



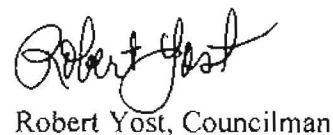
Tim Carroll, Councilman



Joseph Vickers, Councilman

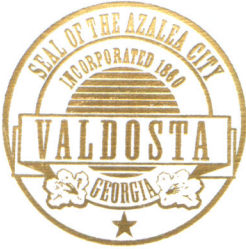


Alvin Payton, Jr., Councilman



Robert Yost, Councilman





## CITY of VALDOSTA, GEORGIA

**Larry H. Hanson**  
*City Manager*

August 19, 2014

Ms. Renae Fischer, GS-13 DAF  
Program Manager, NEPA Center  
2261 Hughes Avenue, Ste 155  
JBSA Lackland, AFB, TX 78236-9853

Dear Ms. Fischer,

The City of Valdosta is in receipt of the Draft Environmental Assessment (EA) the U.S. Air Force has prepared for the proposed A-29 Light Air Support (LAS) Training Beddown. We have thoroughly reviewed the report and agree with its content. We wholeheartedly support the selection of Moody AFB (AFB), Georgia for this important mission. We are pleased to see Moody AFB as the recommended site by the assessment.

In closing, the City of Valdosta is in full support of the proposed A-29 mission being housed at Moody AFB, Georgia. Our community is also in full support of this mission being located at Moody.

Please feel free to contact me if further information is needed.

Sincerely,

Larry H. Hanson  
City Manager

P. O. Box 1125 • 216 E. Central Ave. • Valdosta, Georgia 31603 • (229) 259-3500 • FAX (229) 259-5411

*An Equal Opportunity Employer*





United States Department of the Interior  
Fish and Wildlife Service



Okefenokee National Wildlife Refuge  
Banks Lake National Wildlife Refuge  
2700 Suwannee Canal Road  
Folkston, Georgia 31537  
(912) 496-7366

May 29, 2014

Ms. Renae Fischer  
Environmental Program Manager  
Air Force Civil Engineer Center  
National Environmental Policy Act Center  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

Subject: Proposed Bed Down of an Interim A-29 Light Air Support Training Program for  
Afghan Air Force at Moody Air Force Base, Georgia

Dear Ms. Fischer:

Thank you for the opportunity to comment on the proposed A-29 Light Air Support Training Program that may impact the mission of the U.S. Fish and Wildlife Service (USFWS) at both the Banks Lake and Okefenokee National Wildlife Refuges (NWR).

**Banks Lake**

Banks Lake NWR near Lakeland, Georgia has been impacted by air flights and combat mission training connected with Moody Air Force Base since its designation as a National Wildlife Refuge in 1985. Banks Lake NWR is currently a very popular local and regional fishery resource for southeast Georgia. As ecotourism increases, Lanier County has promoted additional recreational opportunities beyond fishing to include wildlife observation and photography at the refuge.

We are concerned about the impacts of the proposed action on refuge visitation. The annual visitation to the refuge is currently 20,000 visitors per year, and is increasing as development expands in and around Moody Air Force Base and nearby Valdosta and Lowndes County. Additional flights over the refuge will negatively impact the visitors' connection with nature due to noise and sight intrusion. This would be especially noticeable on weekends when the majority of our visiting public uses the refuge.

The refuge and surrounding agricultural lands attract numerous wildlife species to the area as well. Resident and migratory sandhill cranes, wood storks, great blue herons, white ibis and

other large wading birds, in addition to numerous hawks and bald eagles, use the area in large numbers. Increased flights over the refuge will increase the potential for bird strikes.

Prescribed fire is an important management tool for maintaining the wetlands within the Grand Bay-Banks Lake complex. We are concerned that additional overflights will restrict the ability to use prescribed fire as a necessary management tool due to increased concerns the Air Force may have with smoke management. We request that the Air Force continue to accommodate requests from the Georgia Department of Natural Resources and the USFWS for prescribed burning so that both agencies can accomplish their resource management goals.

### **Okefenokee National Wildlife Refuge**

Although the included map does not indicate increased flights over the Okefenokee NWR, we would like to emphasize our concern if this is part of the bed down action. We request that the Environmental Assessment address potential impacts of the proposed action on the degradation of the Wilderness character and Wilderness experience that the Okefenokee NWR provides to the American public. We request the opportunity to work with your office to both quantify when and how often there will be additional air operations over the Okefenokee NWR and discuss operational guidelines for military overflights that will minimize impacts to our mission as much as possible.

To help you understand our concerns for the impact of Moody Air Operations over the Okefenokee NWR, we offer the following information. The refuge has over 353,000 acres of congressionally designated Wilderness within its boundaries. The Okefenokee Wilderness is the third largest designated Wilderness east of the Mississippi River. Over 200,000 visitors come to the refuge each year. A significant number are repeat visitors that have come to know, respect, and now expect a quality of Wilderness experiences with every visit. Refuge staff, volunteers, contractors, concessionaires, and even researchers incorporate Wilderness values of solitude and natural system functions into everyday work.

The eco-tourism industry spawned by refuge Wilderness experiences has become the core of an “Economic Engine” that helps to power the economies of five rural counties. The report, titled *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation* estimated that in 2005, domestic travelers to the Okefenokee NWR added a total of \$74.60 million dollars to Charlton, Ware and Clinch counties.

A large portion of our visitors are day-use visitors who boat, fish, photograph, observe wildlife and attend environmental education activities and interpretive programs. They are accustomed to some of the intrusions imposed by the “crush” of other visitors but can and do seek relief by finding out-of-the-way locations on the refuge where others rarely visit. Multi-day and night Wilderness visitors are fewer in number but their passion for Wilderness cannot be under estimated. They are insistent that the quality of their visits to a Wilderness not be degraded by outside, unnatural circumstances. For instance, they are accustomed to not having cell phone coverage and often comment about how quiet and serene the Wilderness areas continue to be. Visual jet streams are obtrusive in a Wilderness area, along with the light and noise pollution

caused by overflights. Visitors are intrigued with and truly embrace the ideal of not hearing car horns, automobile traffic, heavy equipment, televisions, radios, etc.

The Stephen C. Foster State Park near Fargo, Georgia accommodates about one third of our annual visitation during a normal year. Since the majority of their visitors stay in their commercial campground or in rental cabins, this group plus overnight Wilderness campers within the western portion of the refuge will be severely impacted by any increased air traffic within their visible and auditory airspace.

An additional issue is the 1,500+ colonial wading birds that nest in the northwest quadrant of the refuge. An increase in flights over this area during the nesting season may impact the nesting success for these birds.

As our comments illustrate, we believe there is potential impact to the economies of small rural counties affected by this proposal. We believe that the general public and recreational visitors to these affected refuges should have the opportunity to provide verbal comments through public meetings as well as through comments solicited through local and regional newspapers.

We thank you for allowing us to identify our issues and concerns early on in the environmental assessment process. If there are any questions or any way that we can help with this project in the future, please do not hesitate to contact me (email: [Michael\\_Lusk@fws.gov](mailto:Michael_Lusk@fws.gov); phone: 912-496-7366 ext. 226).

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael Lusk', with a stylized flourish at the end.

Michael Lusk  
Refuge Manager  
Okefenokee National Wildlife Refuge



## HISTORIC PRESERVATION DIVISION

MARK WILLIAMS  
COMMISSIONER

DR. DAVID CRASS  
DIVISION DIRECTOR

August 13, 2014

Renae Fischer, GS-13, DAF  
Program Manager  
AF NEPA Center  
Building 171, 2261 Hughes Avenue, Suite 155  
JBSA Lackland, Texas 78236-9853

**RE: Moody AFB: Add A-29 LAS Training Program, Valdosta  
Lanier and Lowndes Counties, Georgia  
HP-140707-001**

Dear Ms. Fischer:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base in complying with provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the submitted information, HPD concurs that the proposed project will have **no effect** on historic properties that are listed or eligible for listing on the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1), due to the scope of work. Any changes to this project as proposed may require further review by our office for compliance with Section 106. HPD encourages federal agencies to discuss such changes with our office to ensure that potential effects to historic resources are adequately considered in project planning.

Please refer to project number **HP-140707-001** in any future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact me at (404) 651-6546 or [jennifer.dixon@dnr.state.ga.us](mailto:jennifer.dixon@dnr.state.ga.us).

Sincerely,

Jennifer Dixon  
Environmental Review Historian

cc: Allison Duncan, Atlanta Regional Commission

**Moody AFB**

**Interagency Consultation**  
*Recipient and Letter*

The USAF invited the following Federal agency to enter into consultations regarding the preparation of this EA.

Federal Agencies	
United States Fish and Wildlife Service Coastal Georgia Field Office Attn: Mr. Strant Colwell 4890 Wildlife Drive NE Townsend, GA 31331	





DEPARTMENT OF THE AIR FORCE  
23D CIVIL ENGINEER SQUADRON (ACC)  
MOODY AIR FORCE BASE GEORGIA

7 May 14

Mr. John Eunice, III  
23 CES/CD  
3485 Georgia Street  
Moody AFB, GA 31699-1707

United States Fish and Wildlife Service  
Coastal Georgia Field Office  
Attn: Mr. Strant Colwell  
4890 Wildlife Drive NE  
Townsend, GA 31331

Dear Mr. Colwell

We are requesting concurrence from the U.S. Fish and Wildlife Service (USFWS) that the Afghanistan Air Force (AAF) A-29 Light Air Support (LAS) Training Beddown program *may affect, but is not likely to adversely affect* the federally-listed species occurring within Lanier and Lowndes Counties (location of Moody Air Force Base [AFB] and the Grand Bay Range), or the other counties (Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Liberty, Long, McIntosh, Tattnall, and Wayne) in which low altitude flying is allowed within the Moody 2 North Military Operating Area (MOA), Moody 2 South MOA, Coastal MOAs 1 and 2, and Townsend Range.

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 LAS training program for the AAF at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the AAF receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and AAF students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 AAF pilots and 90 AAF maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody AFB, Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-

*Global Power for America*



to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required.

In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be used for this Proposed Action if Moody AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Moody AFB and the indicated range and airspace areas.

For the purpose of analyzing potential impacts to threatened and endangered species, the Region of Influence (ROI) for the Proposed Action is defined as the counties underlying the airspaces that have low altitude capabilities (Moody AFB, Grand Bay Range, Moody 2 North MOA, Moody 2 South MOA, Coastal 1 MOA, Coastal 2 MOA, and Townsend Range), and include Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Lanier, Liberty, Long, Lowndes, McIntosh, Tattnall, and Wayne Counties.

The USAF accessed the USFWS Information, Planning, and Conservation Online system (<http://ecos.fws.gov/ipac/>) on 28 April and 6 May 2014 to determine if any federally-listed species potentially occur in these counties (Table 1) and therefore may potentially occur in the ROI.

**Table 1. Federally Listed, Proposed, and Candidate Species Known to or That May Occur at Moody AFB or under Airspaces Within the ROI**

Common Name	Scientific Name	Federal Listing	County
<b>Mammals</b>			
North Atlantic right whale <sup>1</sup>	<i>Eubalaena glacialis</i>	E	Glynn, Liberty, McIntosh
West Indian manatee	<i>Trichechus manatus</i>	E	Glynn, Liberty, McIntosh
<b>Amphibians</b>			
Frosted flatwoods salamander <sup>1</sup>	<i>Ambystoma cingulatum</i>	T	Berrien, Lanier, Liberty, Long, McIntosh
Striped newt	<i>Notophthalmus perstriatus</i>	C	Berrien, Brantley, Echols, Glynn, Lanier, Liberty, Long, Lowndes, Tattnall
<b>Reptiles</b>			
Eastern indigo snake	<i>Drymarchon corais</i>	T	Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Lanier, Liberty, Long, Lowndes, McIntosh, Tattnall, Wayne

Common Name	Scientific Name	Federal Listing	County
Gopher tortoise	<i>Gopherus polyphemus</i>	C	Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Lanier, Liberty, Long, Lowndes, McIntosh, Tattnall, Wayne
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	Glynn, Liberty, McIntosh
Green sea turtle	<i>Chelonia mydas</i>	T	Glynn, Liberty, McIntosh
Loggerhead sea turtle	<i>Caretta caretta</i>	T	Glynn, Liberty, McIntosh
<b>Fish</b>			
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	Glynn, Liberty, Long, McIntosh, Tattnall, Wayne
<b>Invertebrates</b>			
Altamaha spiny mussel <sup>1</sup>	<i>Elliptio spinosa</i>	E	Glynn, Liberty, Long, McIntosh, Tattnall, Wayne
<b>Birds</b>			
Wood stork	<i>Mycteria americana</i>	E	Atkinson, Berrien, Brantley, Glynn, Lanier, Liberty, Long, Lowndes, McIntosh, Wayne
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Atkinson, Brantley, Liberty, Long, Tattnall
Red knot	<i>Calidris canutus rufa</i>	PT	Glynn, Liberty, McIntosh
Piping plover <sup>1</sup>	<i>Charadrius melodus</i>	T	Glynn, Liberty, McIntosh
<b>Flowering Plants</b>			
Hairy rattlesnake	<i>Baptisia arachnifera</i>	E	Brantley, Glynn, Wayne

C = Candidate

T = Threatened

<sup>1</sup> Designated critical habitat in the county

E = Endangered

PT = Proposed Threatened

The remainder of the airspace utilized by the A-29 aircraft at Moody AFB would be strictly above 8,000 feet above ground level. Additional threatened and endangered species and their habitat occur under these airspaces in multiple counties for the Proposed Action, including various species of clams and flowering plants. However, no flights below 8,000 feet above ground level would occur in these



airspaces, and no ground disturbance, habitat modifications or potential impacts to water quality would occur; therefore, no impacts to these species are anticipated.

Due to the nature of the actions proposed within Coastal 1 MOA, Coastal 2 MOA, and the Townsend Range, which do not extend over marine habitat, no impacts to fish, marine, and invertebrate species (including critical habitat for the North Atlantic right whale and altamaha spinymussel) are expected to occur because the proposed activities would not result in ground disturbance or potential impacts to water quality. For the same reasons, no impacts are expected to flowering plants such as the hairy rattlesweed within these MOAs and range.

The **frosted flatwoods salamander** is endemic to the lower southeastern Coastal Plain, occurring in what were historically longleaf pine-wiregrass flatwoods and savannas. The **striped newt** occurs in isolated, temporary ponds associated with well-drained sands and the surrounding uplands. **Eastern indigo snake** habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields. They are frequently in association with gopher tortoise burrows. The **gopher tortoise** occupies habitats with a well-drained sandy substrate, ample herbaceous vegetation for food, and sunlit areas for nesting, including sandhill, sand pine scrub, pine flatwoods, dry prairie, coastal grasslands and dunes, and mixed hardwood-pine communities. They construct extensive burrow systems and spend much of the time underground.

The frosted flatwoods salamander, striped newt, Eastern indigo snake and gopher tortoise, and their habitat (including critical habitat for the salamander in Liberty County), are not likely to be affected by the overflights since these areas currently experience similar training exercises. Further, no ground disturbance, habitat modifications or potential impacts to water quality would occur; therefore, the USAF anticipates that these species would not be affected by the Proposed Action or the No Action Alternative.

The **wood stork** occurs primarily in marshes, swamps, lagoons, ponds, and occasionally in brackish wetlands. It nests mostly in the upper parts of cypress trees, mangroves, or dead hardwoods over water or on islands along streams or adjacent to shallow lakes. The **red-cockaded woodpecker** prefers mature pine forests, specifically those with long-leaf pines averaging 80-120 years old and loblolly pines averaging 70-100 years old. It excavates cavities in living pine trees and is faithful to its particular tree. **Bald eagles**, which are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, live near lakes, rivers, and marshes where they can find fish, their primary food source. The **red knot** is a shorebird that over-winters along the Georgia coast, primarily on sandy beaches and mud flats. **Piping plovers** also prefer the sandy beaches and shorelines of the coast.

Although the Townsend Range and Coastal MOAs 1 and 2 occur over counties where the red knot and piping plover are listed, the range and MOAs do not include areas above the coastal region; therefore, impacts to these listed species are not expected. Critical habitat for the piping plover occurs along the Georgia coast but would not be affected by the Proposed Action as it occurs outside of those MOAs and range.

There would be a slight increase in risk for bird strikes and disturbance of nesting or roosting activities by listed and protected species resulting from the Proposed Action. Currently no red-cockaded woodpeckers occur or nest on Moody AFB, the Grand Bay Range, or Townsend Range. The locations of wood stork and bald eagle nests are provided to aircrews on an annual basis, and pilots are required to avoid these sites by one mile laterally and vertically per previous consultations with your office (January 20, 2000- FWS Log #00-0587 and March 13, 2000- FWS Log #00-0662). All known wood stork rookeries must be avoided by virtually placing a 1-mile lateral buffer zone around them during the nesting season. In addition, all known bald eagle nests must be avoided by 1-mile laterally and 1,500 feet above-ground level from September 15 through June 1. These restrictions would be extended to apply to all



USAF flights at the Townsend Range and Coastal MOAs 1 and 2 under this Proposed Action. Over the past 15 years, Moody AFB aircraft have only been involved in one strike involving a listed species, and it is unlikely that the Proposed Action would result in any significant increases in strikes or disturbance to these species.

Avian species that occur in the ROI have been exposed to past and ongoing military overflights similar to the Proposed Action. Moody AFB aircraft routinely conduct low-altitude flights in the areas of Grand Bay Range, Moody 2 North MOA, Moody 2 South MOA, Coastal MOAs 1 and 2, and Townsend Range. Baseline noise exposure from aircraft and ordnance use within the ROI has not resulted in reports of significant negative impacts on any wildlife species, including listed species. No low-altitude flights are expected in other areas as part of the Proposed Action. Further, there would be no ground disturbance or habitat modifications occurring as part of the Proposed Action that might affect avian species or their habitat.

For these reasons, we conclude that the effects related to the implementation of the Proposed Action *may affect, but are not likely to adversely affect* the federally-listed species occurring within Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Lanier, Liberty, Long, Lowndes, McIntosh, Tattnall, and Wayne Counties. Similarly, as no changes from the current conditions would occur if the No Action Alternative were to be selected, we anticipate that implementation of the No Action Alternative *will not affect* federally-listed species.

We request your concurrence with our determination. When complete, copies of the draft EA and the draft Finding of No Significant Impact (FONSI) will be forwarded for your review. Please provide written comments, concurrence, or other information regarding the action at your convenience, within 30 days, if possible, from receipt of this letter. Please forward your written response to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, Lackland AFB, TX 78236-9853.

Sincerely

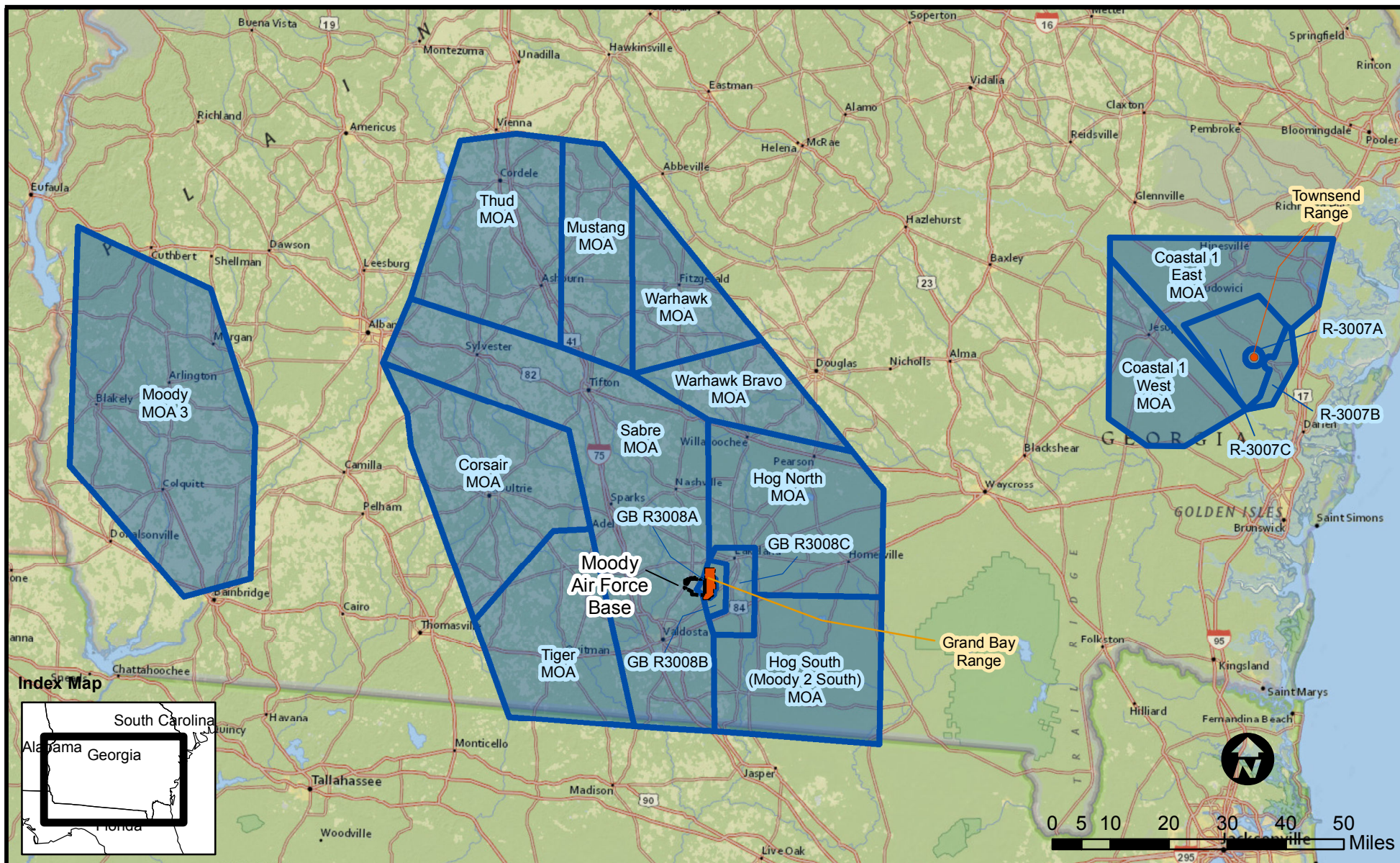


JOHN L. EUNICE, III, GS-14, DAFC  
Deputy Base Civil Engineer

Attachment:




Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Moody AFB





Moody Air Force Base: Proposed Airspaces and Ranges

#### Legend

-  Moody Air Force Base
-  Military Operations Area (MOA) Proposed for Beddown
-  Ranges Proposed for Beddown

**Moody AFB**  
**Interagency Consultation**  
*Response*



## United States Department of the Interior

### Fish and Wildlife Service

105 West Park Drive, Suite D  
Athens, Georgia 30606  
Phone: (706) 613-9493  
Fax: (706) 613-6059

West Georgia Sub-Office  
Post Office Box 52560  
Fort Benning, Georgia 31995-2560  
Phone: (706) 544-6428  
Fax: (706) 544-6419

Coastal Sub-Office  
4980 Wildlife Drive  
Townsend, Georgia 31331  
Phone: (912) 832-8739  
Fax: (912) 832-8744

June 5, 2014

Mr. John L Eunice, III  
Department of the Air Force  
23<sup>rd</sup> Civil Engineer Squadron  
3485 Georgia Street  
Moody Air Force Base, Georgia 31699  
Attention: Ms. Renae Fischer

Re: USFWS 2014-0695

Ms. Fischer,

Thank you for your letter initiating informal section 7 consultation for the proposed Afghanistan Air Force (AAF) A-29 Light Air Support (LAS) Training Beddown Program planned to occur within multiple counties (Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Liberty, Lanier, Long, Lowndes, McIntosh, Tattnall, and Wayne) in Georgia. These counties include the location of Moody Air Force Base and the Grand Bay Range and those counties in which low altitude flying is allowed within the Moody 2 North Military Operating Area (MOA), Moody 2 South MOA, Coastal MOAs 1 and 2, and Townsend Range. We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 *et seq.*) (ESA), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), and the Migratory Bird Treaty Act of 1918 (MBTA) to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

The project proposes to incorporate an interim A-29 training beddown program for the AAF at an installation in the United States. The proposed action would occur at Moody AFB and would not require further construction or expansion of the existing facility. The training program would include training flights over a suitable U. S. Air Force (USAF) bombing or



training range, would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place at Moody AFB and the proposed range and airspace areas.

Sixteen federally listed species were identified as potentially affected by proposed action. These species are: the North Atlantic right whale (*Eubalaena glacialis*), West Indian manatee (*Trichechus manatus*), frosted flatwoods salamander (*Ambystoma cingulatum*), striped Newt (*Notophthalmus perstriatus*), eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), shortnose sturgeon (*Acipenser brevirostrum*), Altamaha spinymussel (*Elliptio spinosa*), wood stork (*Mycteria americana*), red-cockaded woodpecker (*Picoides borealis*), red knot, (*Calidris canutus*), piping plover (*Charadrius melodus*), and hairy rattleweed (*Baptisia arachnifera*). Additionally, the bald eagle (*Haliaeetus leucocephalus*), is protected under the BGEPA and MBTA. The North Atlantic right whale (*Eubalaena glacialis*), and shortnose sturgeon (*Acipenser brevirostrum*) are the responsibility of the National Marine Fisheries Service (Fisheries). The leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), and loggerhead sea turtle (*Caretta caretta*) fall under the jurisdiction of Fisheries when in the water and the U.S. Fish and Wildlife Service when on land. We recommend you contact Fisheries for recommendations on these species.

Based on the information provided in your letter, we concur that the proposed action *may effect, but are not likely to adversely affect* the federally listed species under our jurisdiction occurring within Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Liberty, Lanier, Long, Lowndes, McIntosh, Tattnall and Wayne counties.

We appreciate the opportunity to comment during the planning stages of your project. If you have any additional questions, please write or call our Coastal Georgia Sub Office staff biologist, Gail Martinez at 912-832-8739 ext. 7.

Sincerely,



Strant Colwell  
Coastal Georgia Supervisor

**From:** [SANTICOLA, HENRY J GS-11 USAF ACC 23 CES/CEIEA](#)  
**To:** [Wendy Arjo \(wendya@ageiss-inc.com\)](#); [JACKSON, WILLIAM T CTR USAF HAF AFCEC/CZN](#); [FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN](#); [LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE](#)  
**Subject:** NMFS callback  
**Date:** Monday, June 23, 2014 1:06:36 PM

---

Ms Fischer/Ms Arjo, Mr Dennis Klemm from the NMFS gave me a callback. He said unless you are bombing or strafing into the water and if it is just overflight of the marine areas, he doesn't see a need to consult.

He can be reached at 727-551-5777

v/r  
Hank

Henry J. Santicola  
Environmental Planner  
23 CES/CEIEA Moody AFB, GA  
Com 229-257-2396 DSN 460-2396



## United States Department of the Interior

### Fish and Wildlife Service

105 West Park Drive, Suite D  
Athens, Georgia 30606  
Phone: (706) 613-9493  
Fax: (706) 613-6059

West Georgia Sub-Office  
Post Office Box 52560  
Fort Benning, Georgia 31995-2560  
Phone: (706) 544-6428  
Fax: (706) 544-6419

Coastal Sub-Office  
4980 Wildlife Drive  
Townsend, Georgia 31331  
Phone: (912) 832-8739  
Fax: (912) 832-8744

July 11, 2014

Mr. John L Eunice, III  
Department of the Air Force  
23<sup>rd</sup> Civil Engineer Squadron  
3485 Georgia Street  
Moody Air Force Base, Georgia 31699  
Attention: Ms. Raquel Fischer

Re: USFWS 2014-0695

Dear Ms. Fischer:

We received your email regarding an update to the proposed Afghanistan Air Force A-29 Light Air Support (LAS) Training Beddown program and your request for concurrence that the additional four military training routes (MTRs) to the proposed action *may affect, but is not likely to adversely affect* the federally-listed species occurring in several counties under the MTRs in which low altitude training flights would occur.

In a previous correspondence dated June 5, 2014, the U. S. Fish and Wildlife Service (Service) concurred with your determination that the proposed Afghanistan Air Force A-29 LAS Training Beddown Program *may affect, but is not likely to adversely affect* the federally listed species under our jurisdiction. This consultation included species occurring within Lanier and Lowndes Counties (location of Moody Air Force Base [AFB] and the Grand Bay Range), and the other counties (Atkinson, Berrien, Brantley, Clinch, Echols, Glynn, Liberty, Long, McIntosh, Tattnall, and Wayne) in which low altitude flying is allowed within the Moody 2 North Military Operating Area (MOA), Moody 2 South MOA, Coastal MOAs 1 and 2, and Townsend Range.

The update to the proposed Afghanistan Air Force A-29 LAS Training Beddown Program is the addition of four MTRs to the Region of Influence (ROI) for the Proposed Action and is defined as the counties underlying the four MTRs in Georgia. We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 *et seq.*) (ESA), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), and the Migratory Bird Treaty Act of 1918 (MBTA) to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

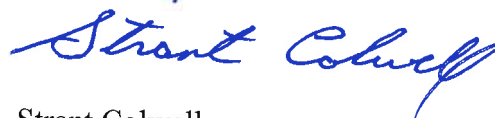
As described in your email, the MTRs do not extend over marine habitat, and no impacts to fish, marine, amphibian, and invertebrate species and their critical habitat are expected to occur because the proposed activities would not result in ground disturbance or potential impacts to water quality. Avian species that occur in the ROI have been exposed to past and ongoing military overflights similar to the Proposed Action. MTRs would be used for specific training objectives and not for regular transit between the base and airspace; therefore flights in the MTR would be infrequent and above 500 feet above ground level.

Six federally listed species were identified as potentially affected by proposed action. These species are: eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), wood stork (*Mycteria americana*), red-cockaded woodpecker (*Picoides borealis*), red knot, (*Calidris canutus*), and piping plover (*Charadrius melodius*). Additionally, the bald eagle (*Haliaeetus leucocephalus*), is protected under the BGEPA and MBTA.

Based on the information provided in your email, we concur that the Proposed Action *may affect, but is not likely to adversely affect* the federally-listed species under our jurisdiction occurring within the counties under the four MTRs. In addition, we concur that the No Action Alternative *will not affect federally-listed species*.

We appreciate the opportunity to comment during the planning stages of your project. If you have any further questions, please contact our Coastal Georgia Sub Office biologist, Gail Martinez, at 912-832-8739 extension 7.

Sincerely,



Strant Colwell  
Coastal Georgia Supervisor

**Moody AFB**

**Interagency Consultation**  
*Previous Consultations*

Georgia Department of Natural Resources  
Historic Preservation Division

D. Barrett, Commissioner

Mark R. Edwards, Division Director and State Historic Preservation Officer  
500 The Healey Building, 57 Forsyth Street, N. W., Atlanta, Georgia 30303  
Telephone (404) 656-2840 Fax (404) 651-8739

September 26, 1996

James R. Mills, Lt. Col., USAF  
Commander, 347th Civil Engineer Sq  
Department of the Air Force  
347 CES/CC  
3485 Georgia Street  
Moody Air Force Base, Georgia 31699-1707

RE: Renovation of Hangar Doors, Building 701  
Moody Air Force Base  
Lowndes County, Georgia  
HP960918-001

Dear Colonel Mills:

The Historic Preservation Division (HPD) has reviewed the photographs and information submitted concerning the proposed renovation of the hangar doors on Building 701 at Moody Air Force Base, Lowndes County, Georgia. Based on the information provided, HPD concurs with the determination that Building 701 does not meet the eligibility criteria for listing in the National Register of Historic Places. Therefore, HPD has no concerns regarding the proposed activities.

If we may be of further assistance, please contact David R. Bennett, Environmental Review Associate Planner, at (404) 656-2840.

Sincerely,



Jeffrey L. Durbin  
Environmental Review Coordinator

JLD:drb

**Moody AFB**

**Intergovernmental Consultation**  
*Recipients and Example Letter*



The USAF invited the following Tribal government representatives to enter into consultations regarding the preparation of this EA.

<b>Tribal Governments</b>	
James Billie, Chairman Seminole Tribe of Florida 30290 Josie Billie Hwy, Ste 1 Clewiston, FL 33440	George Scott, Town King Thlopthlocco Tribal Town P.O. Box 188 Okemah, OK 75859
Tarpie Yargee, Chief Alabama-Quassarte Tribal Town Creek Nations of Indians, Oklahoma P.O. Box 187 Wetumka, OK 74883	Chadwick Smith, Principal Chief The Cherokee Nation P.O. Box 948 Tahlequah, OK 74465
Kenneth Chambers, Principal Chief Seminole Nation of Oklahoma P.O. Box 1498 Wewoka, OK 74884	Emman Spain* Muscogee (Creek) Nation P.O. Box 580 Okmulgee, OK 74447
Brenda Shemayne Edwards, Chairman Caddo Nation P.O. Box 487 Binger, OK 73009	Colabe III Clem Sylestine, Principal Chief Alabama Coushatta Tribe of Texas 571 State Park Road 56 Livingston, TX 77351
Jeremiah Hobia, Chief Kialegee Tribal Town P.O. Box 332 Wetumka, OK 74883	Ann Denson Tucker, Chairwoman Muscogee Nation of Florida 278 Church Road Ponce de Leon, FL 32455
Lovelin Poncho, Chairman Coushatta Tribe of Louisiana P.O. Box 818 Elton, LA 70532	George Wickliffe, Chief United Keetowah Band of Cherokee P.O. Box 746 Tahlequah, OK 74465
Buford Rolin, Chairman Poarch Band of Creek Indians 5811 Jack Springs Rd. Atmore, AL 36502	

\* At the Tribe's request, this is the preferred contact for intergovernmental consultations.



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 23D WING (ACC)  
MOODY AIR FORCE BASE GEORGIA

1 May 14

Colonel Chad P. Franks  
23d Wing Commander  
23 Flying Tiger Way, Suite 1  
Moody AFB GA 31699

Chadwick Smith, Principal Chief  
The Cherokee Nation  
P.O. Box 948  
Tahlequah, OK 74465

Dear Mr. Smith

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.


The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be used for this proposed action

if Moody AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Moody AFB and the indicated range and airspace areas.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the A-29 LAS Training proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC) National Environmental Policy Act (NEPA) Center. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Ms. Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

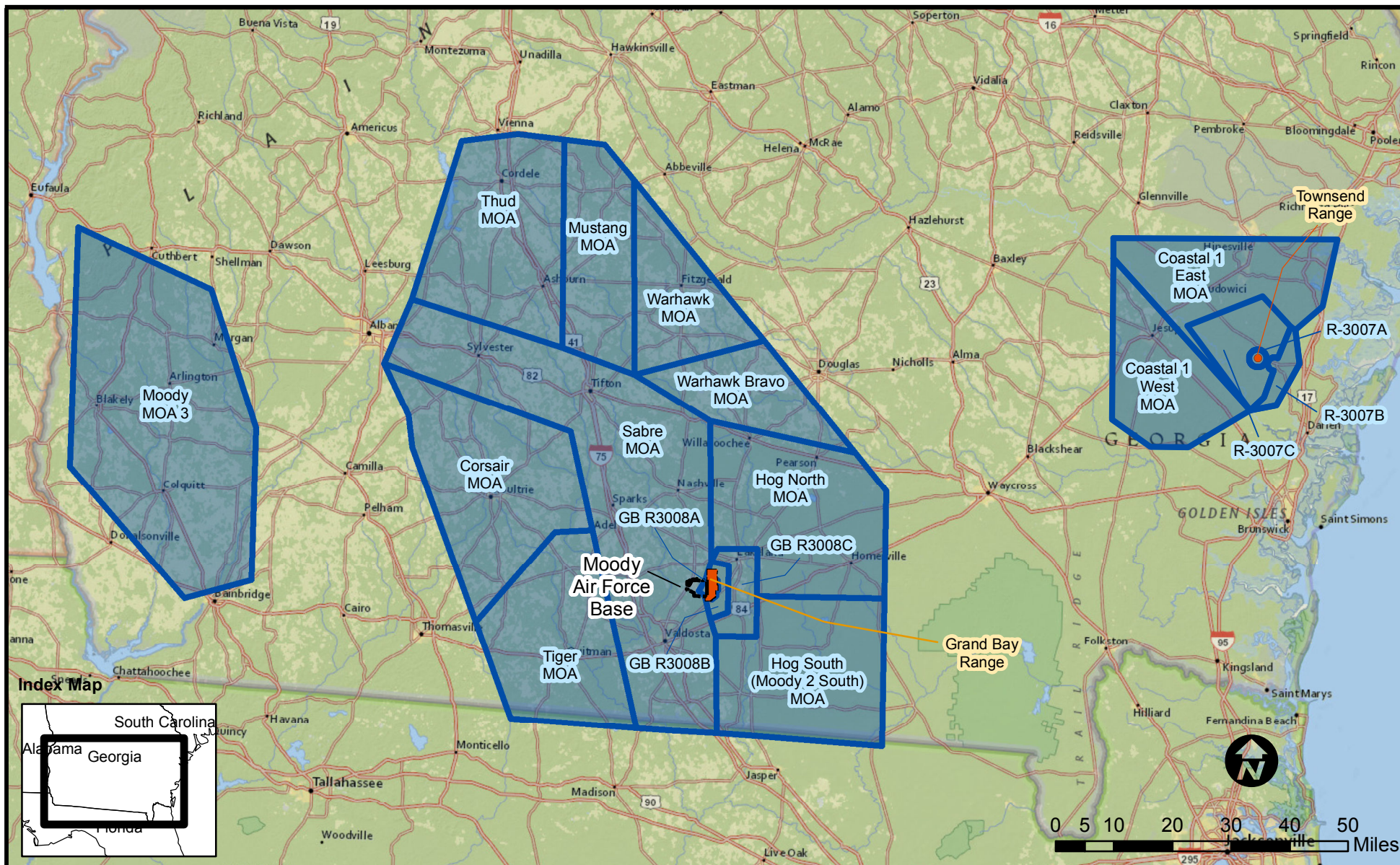
Sincerely

  
CHAD P. FRANKS, Colonel, USAF  
Commander

Attachment:




Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Moody AFB





Moody Air Force Base: Proposed Airspaces and Ranges

#### Legend

-  Moody Air Force Base
-  Military Operations Area (MOA) Proposed for Beddown
-  Ranges Proposed for Beddown

**Moody AFB**

**Intergovernmental Consultation**  
*Responses*

**From:** [FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN](#)  
**To:** [Emman Spain](#)  
**Cc:** [SANTICOLA, HENRY J GS-11 USAF ACC 23 CES/CEIEA](#); [LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE](#); [KEESLING, GRACE E CTR USAF HAF AFCEC/CZN](#); [LAWTON, WILLIAM C CTR USAF HAF AFCEC/CZN](#); [JACKSON, WILLIAM T CTR USAF HAF AFCEC/CZN](#)  
**Subject:** RE: EA to evaluate A-29 Light Air Support training at Moody Air Force Base, GA.  
**Date:** Wednesday, June 18, 2014 10:23:57 AM

---

Thank you for prompt response.

v/r

Renae Fischer, REM, GS-13, DAF  
AF Civil Engineer Center (AFCEC/CZN)  
JBSA-Lackland  
Building 1650  
San Antonio, TX 78226  
DSN: 945-3777  
COMM (210) 925-3777

-----Original Message-----

From: Emman Spain [<mailto:ESpain@MCN-NSN.gov>]  
Sent: Wednesday, June 18, 2014 9:54 AM  
To: FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN  
Subject: EA to evaluate A-29 Light Air Support training at Moody Air Force Base, GA.

Ms. Fischer,

The Muscogee (Creek) Nation has received notice of the United States Air Force preparation of an Environmental Assessment to evaluate the A-29 Light Air Support training program at Moody Air Force Base, GA. At this time we are unaware of any culturally significant sites within the project area. Thank you.

Emman Spain, THPO

Muscogee (Creek) Nation

**Moody AFB**  
**Public Notification**



## Darien News

seventeen grade and new entrants into Georgia schools in grades 8 through

### PUBLIC NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN

An Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; or Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the action on the environment at each alternative location, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI). The Draft EA and proposed FONSI, dated July 2014, are available for review at the following locations:

South Georgia Regional Library  
300 Woodrow Wilson Dr.  
Valdosta, GA 31602  
Lanier County Library  
124 South Valdosta Road  
Lakeland, GA 31635  
Ida Hilton Public Library  
1105 North Way  
Darien, GA 31305

Electronic copies of the documents can also be found on the Air Force Civil Engineer Center (AFCEC) Website at <http://www.afcec.af.mil/>.

You are encouraged to submit comments through August 20, 2014. Comments should be provided to AFCEC/CZN, Attn: Ms. Renae Fischer, Building 171, 2661 Hughes Ave, Ste 155, JBPA Lackland, TX 78236-9853 or emailed to [raquel.fischer@us.af.mil](mailto:raquel.fischer@us.af.mil).

#### PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et. seq. All written comments received during the comment period will be made available to the public and considered during the Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

## Valdosta Daily Times

Miscellaneous Notices	Miscellaneous Notices	Miscellaneous Notices	Miscellaneous Notices
<p><b>PUBLIC NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN</b></p> <p>An Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; or Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.</p>	<p>The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the action on the environment at each alternative location, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI). The Draft EA and proposed FONSI, dated July 2014, are available for review at the following locations:</p> <p>South Georgia Regional Library 300 Woodrow Wilson Dr. Valdosta, GA 31602</p>	<p>Lanier County Library 124 South Valdosta Road Lakeland, GA 31635</p> <p>Ida Hilton Public Library 1105 North Way Darien, GA 31305</p> <p>Electronic copies of the documents can also be found on the Air Force Civil Engineer Center (AFCEC) Website at <a href="http://www.afcec.af.mil/">http://www.afcec.af.mil/</a>.</p> <p>You are encouraged to submit comments through August 20, 2014. Comments should be provided to AFCEC/CZN, Attn: Ms. Renae Fischer, Building 171, 2661 Hughes Ave, Ste 155, JBPA Lackland, TX 78236-9853 or emailed to <a href="mailto:raquel.fischer@us.af.mil">raquel.fischer@us.af.mil</a>.</p> <p><b>PRIVACY ADVISORY NOTICE</b></p>	<p>Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et. seq. All written comments received during the comment period will be made available to the public and considered during the Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.</p> <p>00075468 7/20/14</p>

**Mountain Home AFB**

**Interagency / Intergovernmental Coordination**  
*Recipients and Example Letter*

The following stakeholders were notified of the preparation of this EA and their input solicited.

<b>Federal Agencies</b>	
Bureau of Land Management – Idaho State Office Mr. Jack Peterson, Military Liaison 1387 S. Vinnell Boise, ID 83709	U.S. Forest Service Intermountain Region Ms. Nora Rasure, Regional Forester 324 25th St. Ogden, UT 84401
Bureau of Indian Affairs- Northwest Region Mr. Stanley Speaks, Regional Director 911 Northeast 11th Ave Portland, OR 97232	USFWS, Idaho Fish and Wildlife Office Mr. Brian Kelly, Idaho State Supervisor 1387 S. Vinnell Way, Suite 368 Boise, ID 83709
Federal Aviation Administration- Northwest Mountain Region Ms. Kathryn Vernon, Regional Administrator 1601 Lind Ave Southwest Renton, WA 98057	USFWS, Idaho Fish and Wildlife Office Mr. Mark Robertson, Branch Chief 1387 S. Vinnell Way, Suite 368 Boise, ID 83709
USEPA- Region 10, Office of Ecosystems, Tribal and Public Affairs Mr. David Allnutt, Director 1200 6th Ave, Suite 900 Seattle, WA 98101	
<b>State Agencies</b>	
Idaho Department of Environmental Quality-Boise Regional Office Mr. Pete Wagner, Regional Administrator 1445 N. Orchard St. Boise, ID 83706	Idaho Office of Species Conservation Mr. Dustin Miller, Administrator 304 N. 8th St. Room 149 Boise, ID 83702
Idaho Fish and Game-Headquarters Mr. Cal Groen, Director 600 Walnut St. Boise, ID 83712	Idaho State Historical Society Janet Gallimore, Executive Director 2205 Old Penitentiary Rd. Boise, ID 83712
<b>Other Stakeholders</b>	
The Honorable David Bieter Mayor of Boise 150 North Capitol Blvd Boise, ID 83720	The Honorable Thomas Rist Mayor, City of Mountain Home 160 S. 3rd East Mountain Home, ID 83624
The Honorable Bert Brackett Idaho Senate 48331 Three Creek Hwy Rogerson, ID 83302	Office of the Governor Col. Billy Ritchie, USAF Retired Special Assistant, Military Affairs 150 S. 3rd Street East Mountain Home, ID 83647
The Honorable Mike Crapo United States Senate 251 East Front St, Suite 205 Boise, ID 83720	The Honorable Jimmy Schipani Mountain Home City Council 160 S. 3rd East Mountain Home, ID 83647
The Honorable Pete Nielsen Idaho House of Representatives 4303 S.W. Easy St. Mountain Home, ID 83647	U.S. Congress The Honorable Michael Simpson 802 West Bannock, Suite 600 Boise, ID 83720

The Honorable C.L. “Butch” Otter Governor of Idaho 700 W. Jefferson St. #228 Boise, ID 83720	The Honorable Richard Wills Idaho House of Representatives P.O. Box 602 Glenns Ferry, ID 83623
The Honorable James Risch United States Senate 350 North 9th St, Suite 302 Boise, ID 83720	The Honorable Wes Wootan Elmore County Commission 150 S. 4th East, Suite 3 Mountain Home, ID 83647



DEPARTMENT OF THE AIR FORCE  
AIR FORCE CIVIL ENGINEER CENTER  
JOINT BASE SAN ANTONIO LACKLAND TEXAS

25 April 14

J. Dale Clark, P.E.  
Chief, AF NEPA Center (AFCEC/CZN)  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

USEPA- Region 10, Office of Ecosystems, Tribal and Public Affairs  
Mr. David Allnutt, Director  
1200 6th Ave, Suite 900  
Seattle, WA 98101

Dear Mr. Allnutt

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.


The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be

used for this proposed action if Mountain Home AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Mountain Home AFB and the indicated range and airspace areas.

The LAS EA will assess the potential environmental impacts associated with bedding down the LAS training program at one of these three installations to conduct pilot and maintainer training operations. It will also examine the cumulative effects when combined with past, present, and any future proposals. As part of the Air Force's Environmental Impact Analysis Process (EIAP), we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act (NEPA) Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Renae Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Renae Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

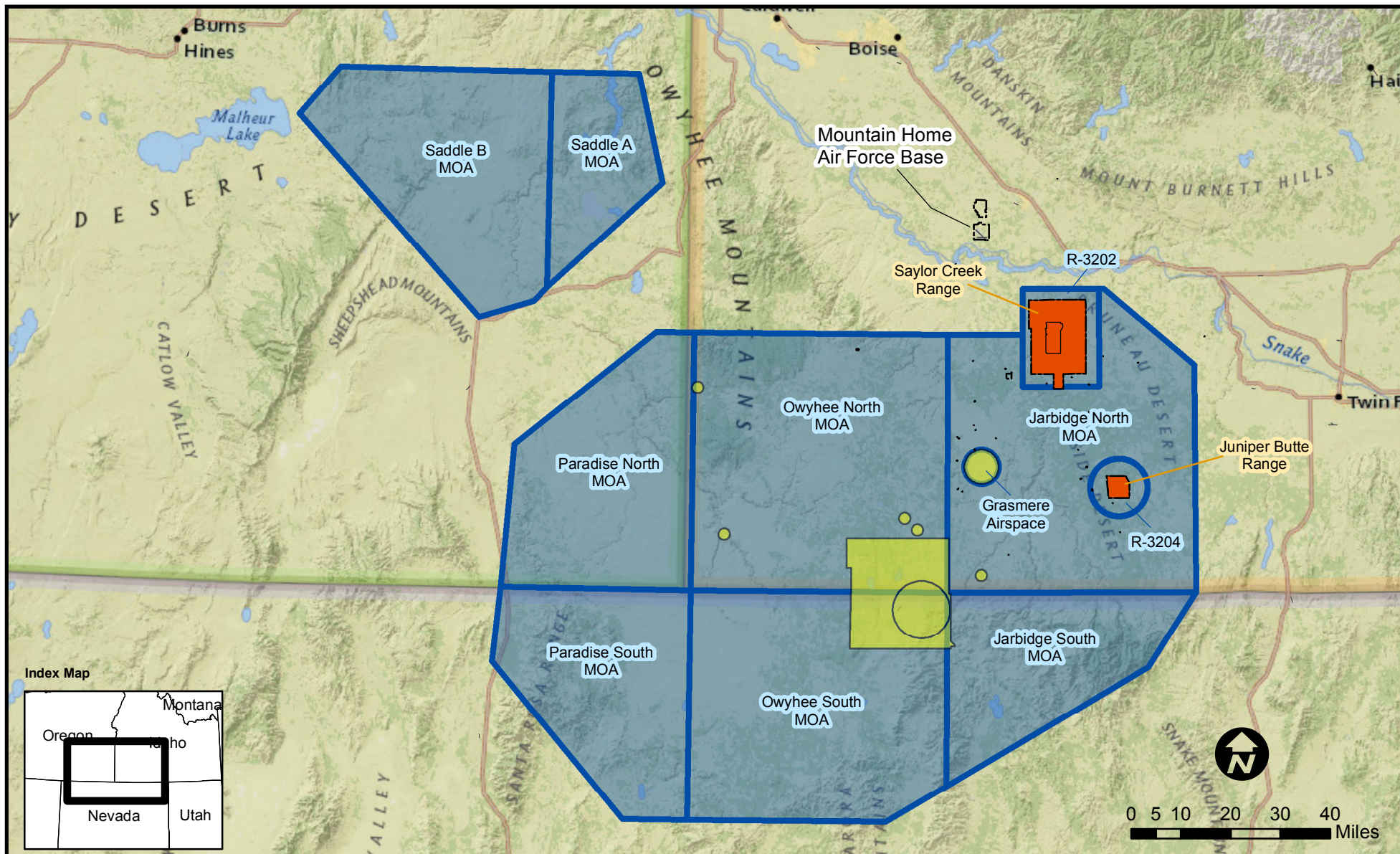
Sincerely,

  
J. DALE CLARK, P.E.  
Chief, AF NEPA Center  
Environmental Directorate

Attachment:

Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Mountain Home AFB





#### Legend

- Mountain Home Air Force Base
- Military Operations Area (MOA) Proposed for Beddown
- Ranges Proposed for Beddown
- Restricted Areas

### Mountain Home Training Complex: Proposed Airspace and Range Complex



**Mountain Home AFB**

**Interagency / Intergovernmental Coordination**  
*Responses*



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

OFFICE OF  
ECOSYSTEMS,  
TRIBAL AND PUBLIC  
AFFAIRS

J. Dale Clark, Chief  
Air Force NEPA Center, Building 171  
2261 Hughes Avenue, Suite 155  
Joint Base San Antonio  
Lackland, Texas 78236-9853

Re: Scoping comments on the proposed Airspace and Ranges for the A-29 LAS Beddown at Mountain Home Air Force Base (EPA Region 10 Project Number 14-0027-DOD)

Dear Mr. Clark:

The U.S. Environmental Protection Agency received your letter dated April 25, 2014 announcing the Department of Defense plan to prepare an Environmental Assessment (EA) for the proposed Airspace and Ranges for the A-29 Light Air Support (LAS) Training program for the Afghan Air Force at an installation in the United States, including the Mountain Home Air Force Base in Elmore County, Idaho. We are submitting our comments on your proposal in accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality regulations for implementing NEPA. We appreciate your contacting us regarding your initiative.

The proposed action is to evaluate potential environmental impacts that would be associated with bedding down the LAS training program at the Mountain Home AFB, Idaho, or Moody and Shaw AFBs in Georgia and South Carolina, respectively. The focus of the program would be Afghan pilot and maintainer training operations using A-29 Super Tucano aircrafts, which are designed to operate in extreme climates and with minimally prepared airfields. Activities would involve air-to-ground fighter missions within existing air space ranges and limitations. Aircrafts would be equipped with inert munitions. The program is expected to begin in 2014 and conclude in 2019.

We appreciate the opportunity to provide early inputs in the proposed NEPA process. Since the proposal does not identify issues and resources to address in the EA analysis, we offer the attached comments to inform you of important issues to consider in the NEPA analysis. If you would like to discuss our attached comments, please contact me at [REDACTED] or by electronic mail at [mbabaliye.theogene@epa.gov](mailto:mbabaliye.theogene@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Theogene".

Theogene Mbabaliye  
Environmental Review and Sediment Management Unit



**The EPA Scoping Comments on the proposed  
Airspace and Ranges for the A-29 LAS Beddown at  
Mountain Home Air Force Base, Idaho**

**Range of Alternatives**

The EA should include a range of reasonable alternatives that meet the stated purpose and need, and are responsive to the issues identified during the scoping process. The Council on Environmental Quality recommends consideration of all reasonable alternatives, even if some of them could be outside the capability or the jurisdiction of the agency. To the greatest extent possible, please quantify potential impacts of each alternative and, in a comparative form, present each alternative's impacts. It would also be useful to list each alternative's impacts and corresponding mitigation measures. The EPA encourages selection of feasible alternatives that will minimize environmental degradation.

**Environmental effects**

The EA should include environmental effects and mitigation measures. This would involve delineation and description of the affected environment, indication of impacted resources, the nature of the impacts, and mitigation measures for the impacts. The following topics would be of particular interest to the EPA.

**Noise impacts**

The EA should evaluate noise disturbance impacts to human populations and wildlife. Churches and other community gathering environments may also be negatively affected by new or increased noise and frequency of military flights. In particular, the Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* directs that each federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. For the proposed action, it is important to consider the impacts from noise on quality of life and human experience, and on health and learning, especially near homes, schools, and daycare centers.

Noise levels from flight operations exceeding ambient background noise typically occur beneath the main approach and departure corridors and in areas immediately adjacent to parking ramps and aircraft staging areas. We recommend the following issues be included among those analyzed in the EA for direct, indirect, and cumulative noise effects.

- The difference in intensity/severity of effects with respect to height above ground and height above sea level for all effects.
- New effects of operations on previously undisturbed areas, and cumulative/increased effects (increased frequency, severity) on areas currently within the base.
- Sleep disturbance, and indoor speech and classroom learning interference.
- Potential hearing loss<sup>1,2</sup>
- Effects on all birds, especially Golden and Bald eagles and sage-grouse.

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<sup>1</sup> <http://www.nonoise.org/epa/Roll7/roll7doc26.pdf>

<sup>2</sup>Methodology for assessing hearing loss risk and impacts in DOD EIS Analysis (2009, June 16).

- Effects on other terrestrial or aquatic wildlife species, including marine mammals.
- Effects on children's health and safety, including effects of noise/disturbance on school and other learning environments.
- Effects on other vulnerable populations, including elderly and disabled.
- Effects on recreation activities and experience.
- Cumulative and indirect effects on sensitive human and non-human animal receptors.
- Avoidance, minimization, and other noise abatement measures, such as noise complaint process.
- Monitoring of effects and potential need for adaptive management.

### ***Air quality impacts***

The EA should evaluate air quality impacts, and detail mitigation steps to take to minimize impacts. This analysis should also address and disclose the project's potential effect on all criteria pollutants under the National Ambient Air Quality Standards (NAAQS), including ozone; visibility impairment, and air quality related values in the protection of any affected Class I Areas, any significant concentrations of hazardous air pollutants, and protection of public health. The types of fuels to be used during the training program activities, traffic during operations, and related volatile organic compounds (VOCs) and nitrogen oxide (Nox) emissions, should be disclosed and the relative effects on air quality and human health evaluated.

In addition to the ambient air quality standards for criteria pollutants, national standards exist for Hazardous Air Pollutants (HAPs<sup>3</sup>), which are regulated under Section 112(b) of the 1990 Clean Air Act Amendments. HAPs emitted from mobile sources are called Mobile Source Air Toxics (MSATs). The EPA has identified six MSAT compounds as having the greatest influence on health: benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter. Unlike the criteria pollutants, there are no NAAQS for benzene and other HAPs. The primary control methodologies for these pollutants in mobile sources are to reduce their content in fuel and alter the engine operating characteristics to reduce the volume of pollutants generated during combustion. The EA should assess all HAPs and MSATs and, if significant, discuss measures to take to reduce those emissions and related impacts.

### ***Wildlife and Habitat impacts***

All potential military activities and associated impacts should be described with respect to their potential effects on wildlife and wildlife habitat areas. To clarify the potential effects on species and habitats, we recommend that flight elevations over land be provided as feet above ground level rather than as feet above mean sea level. The EA should describe the current location, quality and capacity of habitat, its use by wildlife in the project area, and the potential to affect resident and migratory species.

The EA should compare and contrast the extent to which alternatives may impact or avoid impacts to wildlife. Impacts to consider should include disturbance, disruption of normal and necessary behaviors, such as, nesting, foraging/feeding, resting/roosting, rearing young, social interactions, dispersal, daily and seasonal movement/migration patterns, use of available habitat, and predator/prey interactions. Include the potential for direct mortality or injury due to aircraft/wildlife collisions or other mishap. Special habitats, such as National Wildlife Refuges, Wilderness Areas, Outstanding Natural Areas/Key Conservation Sites, and other important remaining habitat should also be considered.

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<sup>3</sup> <http://www.epa.gov/ttn/atw/hlthef/hapindex.html>

### ***Cumulative Impacts***

Cumulative impacts result when the effects of an action are added to other effects on a resource in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis. Cumulative impacts result from compounding the effects of multiple actions on a resource over time.

Resources, ecosystems and communities should be characterized in terms of their response to change and capacity to withstand stresses. We recommend focusing on resources that are “at risk” or have the potential to be significantly impacted by the proposed project. The EA should delineate and explain the reasoning behind geographic boundary decisions. We recommend using natural ecological boundaries to the extent possible. For cumulative wetland impacts, for example, a natural boundary such as a watershed or sub-watershed could be identified for the spatial scope, although an analysis at multiple geographic scales may also be appropriate. The EA should include a determination and explanation for the analyses’ temporal scope.

Trend data, where available, should be used to establish a baseline for the affected resources, project a reasonably foreseeable cumulative baseline for the affected resources, and to predict the environmental effects of the project when added to this baseline.

The EPA has issued guidance on how we are to provide comments on the assessment of cumulative impacts, *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*.<sup>4</sup> The guidance states that in order to assess the adequacy of the cumulative impacts assessment, five key areas should be considered. In our review of the EA, we will assess whether the cumulative effects’ analysis adequately:

- Identifies resources, if any, that are being cumulatively impacted.
- Determines the appropriate geographic area (within natural ecological boundaries) and the time period over which the effects have occurred and will occur.
- Looks at all past, present, and reasonably foreseeable future actions that have affected, are affecting, or would affect resources of concern.
- Describes a benchmark or baseline.
- Includes scientifically defensible threshold levels.

### ***Climate Change effects***

Changing climatic conditions should be taken into account as the NEPA document is being developed. In particular, we recommend including analyses of potential impacts of changing climate on the project, and the project’s potential to contribute to or reduce climate change impacts through direct and indirect effects, adaptation, and mitigation.

### ***Endangered Species Act (ESA)***

The EA should identify the endangered, threatened, and candidate species under the ESA, and other sensitive species within the Mountain Home AFB and vicinity. This evaluation should also describe the critical habitat for the species; identify any impacts additional flights and associated activities would have on the species and their critical habitats; and how the proposed program will meet all requirements under ESA, including consultation with the U.S. Fish and Wildlife Service and National Oceanic and

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<sup>4</sup> <http://www.epa.gov/compliance/resources/nepa.html>

Atmospheric Administration. Please note that if impacts to listed species are significant, the EA may need to include a biological assessment and a description of outcomes of consultation with the agencies. In addition, the EA should also discuss how the Department of the Air Force would contribute to the recovery of listed or declining species, including candidate for listing species, sensitive, and other species of concern Federal or State fish and wildlife agencies.

### **Coordination with Tribal Governments**

The EA should describe the process and outcome of government-to-government consultation between the Department of the Air Force and each of the tribal governments that may be affected by the project, issues that were raised, if any, and how those issues were addressed. That discussion should be consistent with the Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000). As an example, members of a tribe may express concerns about aircraft noise interfering with tribal activities and potential effects on wildlife in their area. The EA, then, would include a discussion on this issue and agreed upon measures to take to minimize the project noise impacts.

### **Environmental Justice and Public Participation**

The EA should include an evaluation of environmental justice populations within the geographic scope of the project. If such populations exist, the EA would need to address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations. One tool available to locate Environmental Justice populations is the Environmental Justice Geographic Assessment tool<sup>5</sup>.

The evaluation should also be consistent with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994). Specifically, the EA should include information on the following:

- Efforts taken to inform the communities about the impacts of the project, and to ensure “meaningful public participation” by the potentially affected communities/individuals.
- Low income and minority communities in the analysis area.
- Issues raised about the project during the public participation sessions and how they would be addressed.
- Impacts are likely to occur and to whom, and potential for disproportionate impacts.
- How inputs received from members of local community were used in the project planning process e.g., development or selection of alternatives.
- Proposed mitigation measures for the impacts that would or are likely to occur.

### **Monitoring**

The proposed project has the potential to affect a variety of resources for an extended period (5 years). Because of that, the project should include an environmental inspection and mitigation-monitoring program to ensure compliance with all mitigation measures and assess their effectiveness. The EA should describe the monitoring program and explain its use as an effective feedback mechanism, allowing adjustments to the training program to meet environmental objectives throughout the 5-year period.

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<sup>5</sup> <http://www.epa.gov/compliance/ej/mapping.html>

Since the Mountain Home AFB has been in operations for a long time, it will be important to discuss the results of monitoring programs that tracked environmental performance at the base, and document adaptive management changes made and proposed. The description of the affected environment should incorporate these conditions and outcomes. The EPA expects that lessons learned from past practices and adaptive management efforts, combined with the need to account for new challenges such as climate change, would influence management of the proposed project.



From: [Howerton, B](#)  
To: [FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN](#)  
Subject: BIA Response LAS  
Date: Thursday, May 08, 2014 10:59:39 AM

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Ms. Fischer,

BIA has no adverse comments to USAF's proposed action. If you have any question please give me a call at the number below.

Dr. BJ Howerton

--

Dr. BJ Howerton, MBA  
Northwest Regional Office  
Environmental Services Mgr.  
911 N.E. 11th Avenue  
Portland, OR 97232-4169

Telephone: (503) 231-6749  
Fax: (503) 231-2275  
Cell: [REDACTED]  
E-mail: [bj.howerton@bia.gov](mailto:bj.howerton@bia.gov)



May 16, 2014

C.L. "Butch" Otter  
Governor of Idaho

Janet Gallimore  
Executive Director

**Administration**  
2205 Old Penitentiary Road  
Boise, Idaho 83712-8250  
Office: (208) 334-2682  
Fax: (208) 334-2774

**Membership and Fund Development**  
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**Historical Museum and Education Programs**  
610 North Julia Davis Drive  
Boise, Idaho 83702-7695  
Office: (208) 334-2120  
Fax: (208) 334-4059

**State Historic Preservation Office and Historic Sites Archeological Survey of Idaho**  
210 Main Street  
Boise, Idaho 83702-7264  
Office: (208) 334-3861  
Fax: (208) 334-2775

**Statewide Sites:**  
• Franklin Historic Site  
• Pierce Courthouse  
• Rock Creek Station and  
• Stricker Homesite

**Old Penitentiary**  
2445 Old Penitentiary Road  
Boise, Idaho 83712-8254  
Office: (208) 334-2844  
Fax: (208) 334-3225

**Idaho State Archives**  
2205 Old Penitentiary Road  
Boise, Idaho 83712-8250  
Office: (208) 334-2620  
Fax: (208) 334-2626

**North Idaho Office**  
112 West 4th Street, Suite #7  
Moscow, Idaho 83843  
Office: (208) 882-1540  
Fax: (208) 882-1763

J. Dale Clark, P.E.  
Chief, AP NEPA Center (AFCEC/CZN)  
Department of the Air Force

**Re: US Air Force – Light Air Support (LAS), Mountain Home Air Force Base  
Idaho SHPO Review#: 2014-723**

Dear Mr. Clark,

The Idaho State Historic Preservation Office (SHPO) received your letter dated April 25, 2014. The letter mentioned the US Air Force preparing an Environmental Assessment to evaluate impacts associated with the A-29 Light Air Support training program at three potential sites, including the Mountain Home Air Force Base. At this moment, the SHPO does not have concerns for the Environmental Assessment of the Mountain Home AFB.

We look forward to working with you on this project if Mountain Home AFB is selected to host the A-29 Light Air Support training program. Thank you for your letter.

If you have questions or concerns, please contact me at [jamee.fiore@ishs.idaho.gov](mailto:jamee.fiore@ishs.idaho.gov) or [REDACTED]

Thank you for consulting with us,

**Jamee N. Fiore, MHP  
Historic Preservation Review Officer  
Idaho State Historic Preservation Office**





C.L. "Butch" Otter  
Governor of Idaho

Janet Gallimore  
Executive Director

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**State Historic Preservation  
Office and Historic Sites  
Archeological Survey of  
Idaho**  
210 Main Street  
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Office: (208) 334-3861  
Fax: (208) 334-2775

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North Idaho Office  
112 West 4th Street, Suite #7  
Moscow, Idaho 83843  
Office: (208) 882-1540  
Fax: (208) 882-1763



August 11, 2014

Ms. Renae Fischer  
GS-13, DAF  
Program Manager, NEPA Center  
Department of the Air Force

**Re: US Air Force – Light Air Support (LAS) Training Beddown, Mountain  
Home Air Force Base  
Idaho SHPO Review No.: 2014-723**

Dear Ms. Fischer,

The Idaho State Historic Preservation Office (SHPO) received your letter dated July 20, 2014. The letter mentioned the US Air Force preparing an Environmental Assessment to evaluate impacts associated with the A-29 Light Air Support Training Beddown program at three potential sites, including the Mountain Home Air Force Base. At this moment, the SHPO does not have concerns for the LAS Training Beddown.

The Idaho SHPO finds a determination of effect to be **No Adverse Effect to Historic Properties**. We look forward to working with you on this project if Mountain Home AFB is selected to host the A-29 Light Air Support training program. Thank you for your letter.

If you have any questions, please contact me at [jamee.fiore@ishs.idaho.gov](mailto:jamee.fiore@ishs.idaho.gov) or (208) 334-3861 ext 101.

Thank you for consulting with us,

//  
**Jamee N. Fiore, MHP  
Historic Preservation Review Officer  
Idaho State Historic Preservation Office**



STATE OF IDAHO  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
BOISE REGIONAL OFFICE  
1445 North Orchard Street • Boise, ID 83706-2239 • (208) 373-0550

## *DEQ Response to Request for Environmental Comment*

Date: 08/04/2014  
Agency Requesting Comments: Department of the Air Force  
Date Request Received: 07/21/2014  
Applicant/Description: Light air support training beddown

*Thank you for the opportunity to respond to your letter dated July 20, 2014.*

*Based on the information provided, it appears there are no issues within our regulatory authority. At this time, we do not have any comments; however, we do request that this project consider the state and federal rules and regulations for air, water, waste and the overall environment. If there is additional information to be reviewed, please let us know.*

*We appreciate the opportunity to review the application, if you have additional questions or concerns, please contact me at (208) 373-0550.*

Sincerely,

*Danielle Robbins*

Danielle Robbins  
[danielle.robbs@deq.idaho.gov](mailto:danielle.robbs@deq.idaho.gov)  
Boise Regional Office  
Idaho Department of Environmental Quality

C: File # 1969

**Mountain Home AFB**

**Interagency Consultation**  
*Recipient and Letter*

The USAF invited the following Federal agency to enter into consultations regarding the preparation of this EA.

Federal Agencies	
US Fish and Wildlife Service, Idaho State Office Attn: Barbara Schmidt, Biologist 1387 S. Vinnell Way, Suite 368, Boise, ID 83709	

**From:** RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA  
**To:** [Schmidt, Barbara](#)  
**Subject:** Informal Consultation - A-29 LAS (FOUO)  
**Date:** Wednesday, April 09, 2014 10:25:00 AM  
**Attachments:** [LAS DOPAA-DRAFT- A3Q input 3 Apr.docx](#)

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Barb;

As we discussed on the phone, attached is the Draft Description of Proposed Action and Alternatives for the Environmental Assessment for the A-29 Light Air Support (LAS) Training Beddown. This proposal would determine suitable location to provide pilot and maintainer training in the A-29 (Super Tucano) for Afghan Air Force (AAF) personnel. Mountain Home AFB is one of 3 bases being considered. We feel that this proposal is within our existing consultation: Biological Opinion on the effects of U.S. Air Force ongoing actions at Juniper Butte Range and in Owyhee County, Idaho on the slickspot peppergrass (*Lepidium papilliferum*) 14420-2010-F-0405. The A-29 LAS would only use BDU-33 ordnance at Juniper Butte Range and would abide by flare restrictions described in the Biological Assessment. Use of strafe, 2.75" rockets and BDU-50/GBU-12 munitions will not occur on Juniper Butte Range.

Please verify that this proposal is consistent with our existing consultation.

Thanks;

Carl Rudeen  
Natural Resources Manager

"The information herein is For Official Use Only (FOUO) which must be protected under the Privacy Act of 1974, as amended. Unauthorized disclosure or misuse of this PERSONAL INFORMATION may result in criminal and/or civil penalties."



**Mountain Home AFB**

**Interagency Consultation**  
*Response*

**From:** [Schmidt, Barbara](#)  
**To:** [RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA](#)  
**Cc:** [Mark Robertson](#)  
**Subject:** A-29 Light Air Support Training Beddown - Technical Assistance  
**Date:** Thursday, April 17, 2014 4:34:12 PM

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Hi, Carl. As requested on our April 9, 2014 telephone conversation, this email documents Fish and Wildlife Service (Service) acknowledgement of consistency of the proposed A-29 beddown project with the Mountain Home Air Force Base's (MHAFB) existing section 7 consultation for ongoing actions on the MHAFB and implementation of the MHAFB Integrated Natural Resource Management Plan (INRMP). For additional inquiries regarding this email, please refer to project tracking numbers 14420-2010-F-0405 and 01EIFW00-2012-F-0188. Barb

The Fish and Wildlife Service (Service) received a request from the Mountain Home Air Force Base (MHAFB) on April 9, 2014 for acknowledgment of section 7 compliance regarding the effects of a proposed A-29 Light Air Support (LAS) Training Beddown on slickspot peppergrass, a species proposed for reinstatement as threatened under the Endangered Species Act of 1973, as amended, and its habitat. The proposed action would include beddown of up to 20 A-29 Super Tucano aircraft for military training at MHAFB over a period of 36 months. Military training activities associated with the A-29 LAS beddown that will occur within the range of slickspot peppergrass as described in an April 9, 2014 telephone conversation and the subsequent email, may include overflights, dropping of inert ordnance, and deployment of chaff and flares. The A-29 LAS military training activities would adhere to all conservation measures to avoid or minimize impacts to slickspot peppergrass and its habitat as described in the MHAFB April 27, 2010 Slickspot Peppergrass Biological Assessment for Juniper Butte Range (Air Force 2010, entire) and the 2012 MHAFB INRMP (Air Force 2012, entire). Effects of these military training activities and associated support activities (including ordnance removal, facilities maintenance, and fire suppression) are described within the Biological Opinion on the effects of U.S. Air Force ongoing actions at Juniper Butte Range and in Owyhee County, Idaho on the slickspot peppergrass (*Lepidium papilliferum*) (FWS 2010, entire) as well as in the original 2004 MHAFB Integrated Natural Resource Management Plan (INRMP) and the updated 2012 MHAFB INRMP (Air Force 2004, entire, Air Force 2012, entire). The MHAFB has concluded that the A-29 LAS military training proposal is consistent with the existing consultation addressing effects of ongoing military training actions on slickspot peppergrass and its amendment to include the 2012 MHAFB INRMP.

FWS acknowledges the MHAFB's conclusion that the proposed A-29 LAS training beddown is consistent with existing section 7 consultation regarding the effects of ongoing actions and for the MHAFB INRMP on slickspot peppergrass and its habitat. Effects of MHAFB military training and associated support activities on slickspot peppergrass have previously undergone section 7 consultation (USFWS 2010, entire; USFWS 2012, entire). Our acknowledgement that the proposed A-29 LAS beddown is consistent with the existing section 7 consultation for military training activities at MHAFB is based on the following rationales.

- There are no significant differences between the proposed A-29 LAS beddown and the ongoing military training activities at MHAFB (inclusive of conservation measures contained within the 2004 MHAFB INRMP and the updated 2012 MHAFB INRMP) as analyzed in our October 2010 biological

opinion, as amended.

- The scope and magnitude of effects from the A-29 LAS beddown will result in no significant difference in effects to slickspot peppergrass relative to current military training and associated activities as described in our October 2010 biological opinion, as amended.
- Current environmental baseline conditions have not significantly changed from those described in our October 2010 biological opinion, as amended.
- MHAFB, including Juniper Butte Range, has been excluded from proposed critical habitat, and no critical habitat for slickspot peppergrass has been designated at this time; therefore, none will be affected.

Our acknowledgement is supported by the following: the current status of slickspot peppergrass, the environmental baseline of the action area, the effects of the A-29 LAS beddown, and cumulative effects are essentially identical to those described and considered in the original MHAFB 2010 consultation, as amended (USFWS 2010, entire; USFWS 2012, entire).

We recommend that you retain a copy of this email in your A-29 LAS project files for MHAFB for future reference. Thank you for your continued commitment to the conservation of special status species.

**Citations:**

U.S20 U.S. Air Force (Air Force). 2012. Final Juniper Butte Range integrated natural resource management plan. 407 pp.

U.S. Air Force (Air Force). 2012. Integrated Natural Resource Management Plan for Mountain Home Air Force Base, Small Arms Range, Saylor Creek Air Force Range, Juniper Butte Range, and Other Mountain Home Range Complex Sites. 976 pp. + appendices.

U.S. Fish and Wildlife Service (USFWS). 2010. Biological Opinion on the Effects of U.S. Air Force Ongoing Actions at Juniper Butte Range and in Owyhee County, Idaho on the Slickspot Peppergrass (*Lepidium papilliferum*). U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, Boise, Idaho. October 2010. Tracking Number 14420-2010-F-0405. 110 pp.

U.S. Fish and Wildlife Service (USFWS). 2012. Biological Opinion on the Effects of Mountain Home Air Force Base 2012 Integrated Natural Resource Management Plan in Elmore, Owyhee, and Twin Falls Counties, Idaho on the Slickspot Peppergrass (*Lepidium papilliferum*). U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, Boise Idaho. April 2012. Tracking Number 01EIFW00-2012-F-0188. 5 pp. plus attachments.

Barbara Schmidt (formerly Barbara Chaney)

US Fish and Wildlife Service  
1387 South Vinnell Way, Room 368  
Boise, Idaho 83709  
208-378-5259  
<http://www.fws.gov/idaho/>

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

**From:** [Schmidt, Barbara](#)  
**To:** [RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA](#); [RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA](#)  
**Subject:** Fwd: A-29 EA - Military Training Routes Section 7?  
**Date:** Friday, June 13, 2014 2:22:51 PM

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Hope you get this via one address or the other. Barb

Barbara Schmidt (formerly Barbara Chaney)  
US Fish and Wildlife Service

1387 South Vinnell Way, Room 368  
Boise, Idaho 83709  
208-378-5259

<http://www.fws.gov/idaho/>

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

----- Forwarded message -----

From: Schmidt, Barbara <barbara\_schmidt@fws.gov>  
Date: Fri, Jun 13, 2014 at 11:26 AM  
Subject: Re: A-29 EA - Military Training Routes Section 7?  
To: "RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA" <carl.rudeen.1@us.af.mil>  
Cc: Gary Miller <gary\_miller@fws.gov>, Andy Starostka <andy\_starostka@fws.gov>, Suzanne Anderson <suzanne\_anderson@fws.gov>, Mark Robertson <mark\_robertson@fws.gov>, Jason Pyron <jason\_pyron@fws.gov>, Greg Burak <greg\_burak@fws.gov>, Kathleen Hendricks <kathleen\_hendricks@fws.gov>, Katie Powell <katie\_powell@fws.gov>

Hi, Carl. I've reviewed the Military Training Routes (MTR) in response to your question about the need for section 7 consultation on these routes for the proposed Afghan beddown project at Mountain Home Air Force Base (MHAFB). After receiving input from Gary Miller in our LaGrande Field Office in Oregon and Andy Starostka from our Nevada Fish and Wildlife Office in Reno, the FWS does not anticipate the need for section 7 consultation associated with military training activities in the MTR for the proposed beddown. We identified species that could potentially be impacted by noise disturbance associated with low altitude military training (greater-sage grouse and yellow-billed cuckoo); however, under the Endangered Species Act, section 7 is not required for candidate species (greater sage-grouse), and is only required for species proposed for listing (yellow-billed cuckoo) if the Federal action agency (Air Force) determines that the proposed action may jeopardize the continued existence of the species or destroy or adversely modify proposed critical habitat (see section 7(a)(4) - Note that it is highly unlikely that it could be determined that the proposed action would jeopardize the continued existence of yellow-billed cuckoo across the range of this species).

Although section 7 consultation/conference does not appear to be required for activities within the MTR for the proposed project, the FWS encourages the Air Force to conduct a thorough analysis of the potential effects of noise disturbance associated with the proposed beddown on wildlife, including special status species such as the greater sage-grouse and yellow-billed cuckoo, in your NEPA document, and to provide appropriate conservation measures to avoid or minimize potential impacts. We also encourage the Air Force to include a thorough analysis of effects of the project on migratory birds, particularly raptors and owls, including effects of training-related noise disturbance and avian aircraft collisions, in your NEPA document, and to avoid or minimize impact to these species as well. The FWS looks forward to providing review comments on the soon-to-be-released draft EA for the proposed beddown project at MHAFB.

Thank you for your interest in threatened and endangered species conservation. Please give me a call or email if

you require additional information. Barb

Barbara Schmidt (formerly Barbara Chaney)  
US Fish and Wildlife Service

1387 South Vinnell Way, Room 368  
Boise, Idaho 83709  
208-378-5259  
<http://www.fws.gov/idaho/>

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

On Thu, Jun 12, 2014 at 3:55 PM, RUDEEN, CARL E GS-11 USAF ACC 366 CES/CEIEA  
<carl.rudeen.1@us.af.mil> wrote:

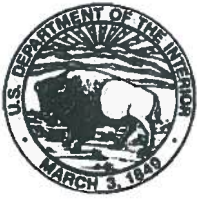
Barb;

As we discussed, it isn't clear to me if we need to do Section 7 Consultation for the portion of the Environmental Assessment for the A-29 Afghan Beddown at Mountain Home Air Force Base that affects our Military Training Routes (MTRs). The EA is scheduled to be released for public comment in the next day or two, but the question came up whether the A-29s may affect a listed species by using the MTRs. Some MTRs have a floor as low as 100 feet above ground level. Here is some info taken from our 2010 Airspace EA:

Military Training Route. Because of the need to train for low-level aerial combat, a joint venture between the FAA and Department of Defense resulted in the establishment of MTRs for low-level, high-speed training. MTRs are generally below 10,000 feet MSL and involve military aircraft operating in excess of 250 knots. Because of the maneuvering and high speeds of military aircraft in these routes, normal "see-and-avoid" VFR traffic scanning practices may not be adequate to avoid aircraft conflicts. Therefore, nonparticipating civil aircraft exercise extreme caution and vigilance in the vicinity of an MTR. MTR segments are identified and charted as either IR routes (IFR) or VR routes (VFR), where IR routes can be used regardless of weather. MTRs are designated as one-way routes.

In military flying, onset rate corrections are required most commonly during high speed, low altitude operations on Military Training Routes (MTRs). MTRs are typically narrow corridors between successive navigation waypoints that are repeatedly flown in the same manner, often at low altitudes, by a few aircraft at most at any one time.

Carl Rudeen  
Natural Resources Manager



United States Department of the Interior  
U.S. Fish and Wildlife Service

Idaho Fish and Wildlife Office

1387 S. Vinnell Way, Room 368

Boise, Idaho 83709

Telephone (208) 378-5243

<http://www.fws.gov/idaho>



Ms. Renae Fischer  
Program Manager, NEPA Center  
AFCEC/CZN  
2261 Hughes Avenue Ste 155  
JBSA Lackland Air Force Base, Texas 78236-9853

**AUG 19 2014**

Subject: Afghan Air Force A-29 Light Air Support Training Program at Mountain Home  
Air Force Base—Elmore, Owyhee, and Twin Falls Counties—Draft EA  
In Reply Refer to: 01EIFW00-2014-CPA-0052

Dear Ms. Fischer:

This correspondence is in response to your letter received by the U.S. Fish and Wildlife Service (Service) dated July 20, 2014, requesting comments on the draft Environmental Assessment (EA) for the US Air Force's (USAF) proposed Afghan Air Force A-29 Light Air Support (LAS) training program. The draft EA contains three proposed sites located in three states, one of which includes the Mountain Home Air Force Base (MHAFB) located in Elmore County, Idaho, with air space extending into Owyhee and Twin Falls Counties, Idaho. The Service has reviewed the draft EA for the A-29 LAS training program with regard to the MHAFB and associated airspace; we have no comments to provide regarding the draft EA.

Thank you for the opportunity to review the MHAFB portion of this draft National Environmental Policy Act (NEPA) document. Please contact Barbara Schmidt of my staff at (208) 378-5259 if you require additional information.

Sincerely,

*for*   
Michael Carrier  
State Supervisor

cc: USFWS, Region 1, Portland (Stavrakas)  
Air Force, MHAFB (Rudeen)

**Mountain Home AFB**

**Interagency Consultation**  
*Previous Consultations*



Survey

file 29-1



February 15, 2007

Sheri Mattoon-Bowden, Cultural Resources Program Manager  
366 CES/CEVA  
1100 Liberator St.  
Mountain Home AFB, ID 83648

*"The History and Preservation People"*

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Fax: (208) 334-2774

**Archaeological Survey of Idaho**  
210 Main Street  
Boise, Idaho 83702-7264  
Office: (208) 334-3847  
Fax: (208) 334-2775

**Historical Museum and  
Education Programs**  
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Office: (208) 334-2120  
Fax: (208) 334-4059

**Historic Preservation Office**  
210 Main Street  
Boise, Idaho 83702-7264  
Office: (208) 334-3861  
Fax: (208) 334-2775

**Historic Sites Office**  
2445 Old Penitentiary Road  
Boise, Idaho 83712-8254  
Office: (208) 334-2844  
Fax: (208) 334-3225

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Office: (208) 334-2620  
Fax: (208) 334-2626

**Research Library**  
(208) 334-3556

**Oral History**  
Office: (208) 334-3863  
Fax: (208) 334-3198

RE: Historic Building Inventory and Evaluations, MHAFFB, Aug 2006.

Dear Ms. Mattoon-Bowden,

Thank you for the opportunity to review and comment on the Historic Building Inventory and Evaluations, Mountain Home AFB, dated August 2006, by Geo-Marine, Inc. Attached are our more detailed comments and preliminary determinations.

In general, we concur with your evaluations (with a couple of minor exceptions as discussed in the memo). Specifically, we concur with the eligibility of the Nose Dock Hangars historic district and the Special Weapons Area historic district. We see the other site form items as administrative in nature and look forward to receiving corrected or clarified information.

If you have any questions, please contact us.

Sincerely,

Susan Pengilly Neitzel  
Deputy State Historic Preservation Officer

attch.



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# IDAHO STATE HISTORICAL SOCIETY

CECIL D. ANDRUS, Governor

April 8, 1993

**Director**

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Boise, Idaho 83702  
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210 Main St.  
Boise, Idaho 83702  
208-334-3847

**Education**

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Boise, Idaho 83702  
208-334-2120

**Genealogical Library**

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208-334-2305

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210 Main St.  
Boise, Idaho 83702  
208-334-3863

**Publications**

450 N. 4th St.  
Boise, Idaho 83702  
208-334-3428

John W. Hale, Chief  
Engineering Flight  
366th Civil Engineering Squadron (ACC)  
1030 Liberator St., Bldg 1300  
Mountain Home AFB, ID 83648-5424

RE: Review of WWII structures.

Dear Mr. Hale:

Thank you for your letter of March 31 regarding the "Mountain Home Air Force Base World War II Temporary Buildings Architectural Inventory and Evaluation" and your request to clarify the status of 57 structures.

Our review of the report indicates that the only structures evaluated in depth were the 20 buildings, of which we have determined 6 are eligible for the National Register of Historic Places (see our letter of December 13, 1991). The remaining 57 structures are not buildings under the definitions cited in the report and the Programmatic Agreement concerning WWII temporary buildings. Based on our knowledge of the Base, and confirmed with Mr. Richard Scheuch of MHAFB, the remaining 57 structures have been altered significantly over the years, are lacking in structural components, and do not possess character-defining aspects which would meet National Register criteria. Therefore, the remaining 57 structures are not eligible for the National Register of Historic Places.

Thank you for the opportunity to comment. If we can be of further assistance, please contact us.

Sincerely,

  
John R. Hill, Director and  
State Historic Preservation Officer

**Mountain Home AFB**

**Intergovernmental Consultation**  
*Recipients and Example Letter*

The USAF invited the following Tribal government representatives to enter into consultations regarding the preparation of this EA.

<b>Tribal Governments</b>	
Nathan Small, Chairman Shoshone-Bannock Tribes P.O. Box 396 Ft. Hall, ID 83203	Diane Teeman, Chairman Burns Paiute Tribe H.C. 71, 100 Pasigo St. Burns, OR 97720
Dennis Smith Sr., Chairman Shoshone-Paiute Tribes of Duck Valley P.O. Box 219 Owyhee, NV 89832	Jason Walker, Chairman Northwestern Band of the Shoshone Nation 707 N. Main St. Brigham City, UT 84302
Tildon Smart, Chairman Paiute-Shoshone Tribes of Fort McDermitt P.O. Box 457 McDermitt, NV 89421	





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 366TH FIGHTER WING (ACC)  
MOUNTAIN HOME AIR FORCE BASE IDAHO

28 Apr 14

Colonel David R. Iverson  
366th Fighter Wing Commander  
366 Gunfighter Avenue Ste 331  
Mountain Home AFB ID 83648

Dennis Smith Sr., Chairman  
Shoshone-Paiute Tribes of Duck Valley  
P.O. Box 219  
Owyhee, NV 89832

Dear Chairman Smith

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have

sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be used for this proposed action if Mountain Home AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Mountain Home AFB and the indicated range and airspace areas.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the A-29 LAS Training proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC) National Environmental Policy Act (NEPA) Center. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Ms. Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

Sincerely,

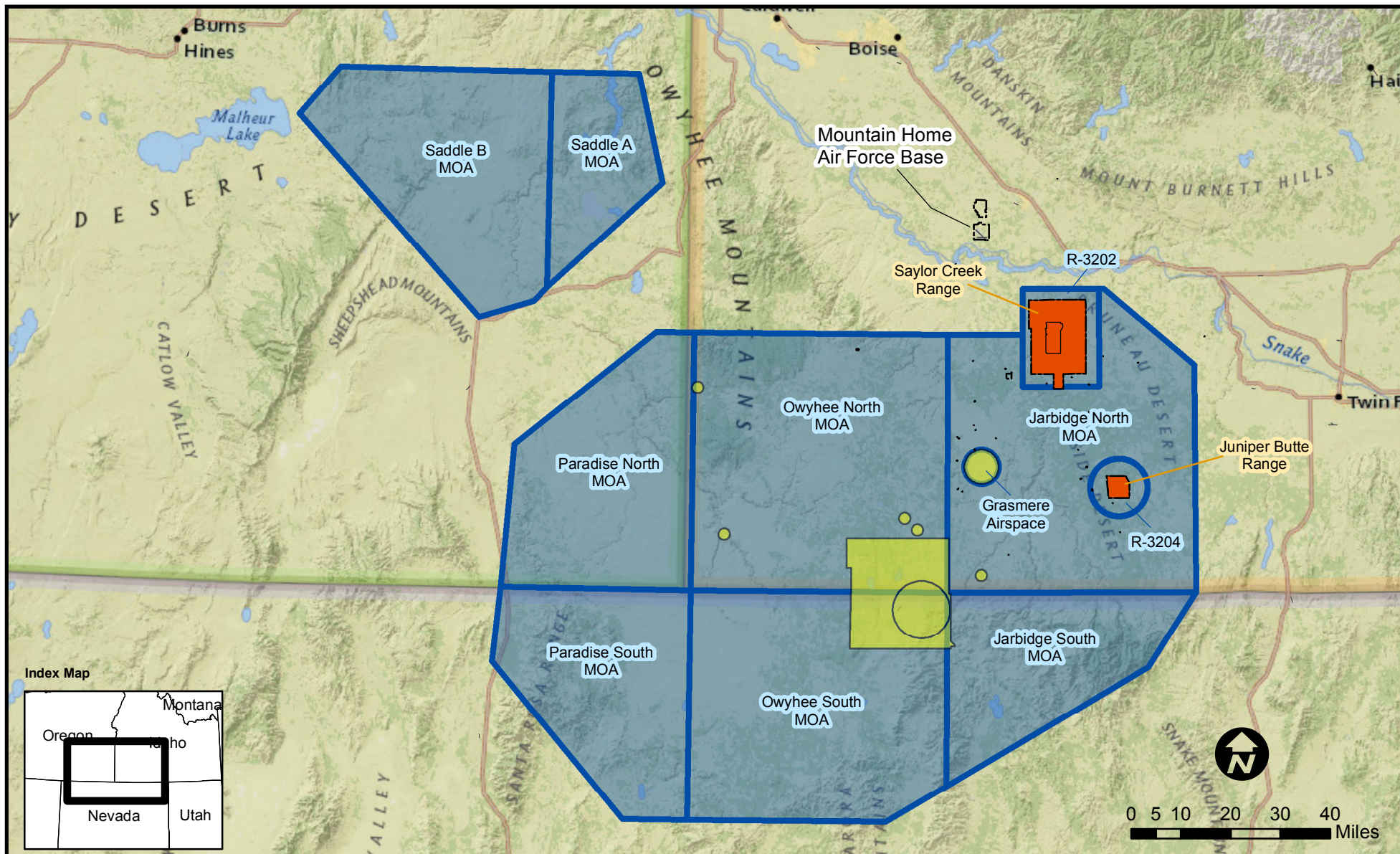


DAVID R. IVERSON, Colonel, USAF  
Commander

Attachment:

Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Mountain Home AFB





**Legend**

- Mountain Home Air Force Base
- Military Operations Area (MOA) Proposed for Beddown
- Ranges Proposed for Beddown
- Restricted Areas

**Mountain Home Training Complex: Proposed Airspace and Range Complex**



**Mountain Home AFB**

**Intergovernmental Consultation**  
*Responses*

## **Mountain Home AFB**

### **Public Notification**

**PUBLIC NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN**

An Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; or Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the action on the environment at each alternative location, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI). The Draft EA and proposed FONSI, dated July 2014, are available for review at the following locations:

Mountain Home Public Library  
790 N 10th E Street  
Mountain Home, ID 83647

Mountain Home AFB Library  
480 5th Avenue, Building 100  
Mountain Home AFB, ID 83648

Electronic copies of the documents can also be found on the Air Force Civil Engineer Center (AFCEC) Website at <http://www.afcec.af.mil/>.

You are encouraged to submit comments through August 20, 2014. Comments should be provided to AFCEC/CZN, Attn: Ms. Renae Fischer, Building 171, 2661 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853 or emailed to [raquel.fischer@us.af.mil](mailto:raquel.fischer@us.af.mil).

**PRIVACY ADVISORY NOTICE**

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et. seq. All written comments received during the comment period will be made available to the public and considered during the Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

**PUBLIC NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN**

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One Publication: July 16, 2014

Twin Falls Times-News

**PUBLIC NOTICE OF AVAILABILITY DRAFT  
ENVIRONMENTAL ASSESSMENT AND PROPOSED  
FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT  
AIR SUPPORT (LAS) TRAINING BEDDOWN**

Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.

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**Mountain Home Public Library**

1010 N 10th E Street  
Mountain Home, ID 83647

**Mountain Home AFB Library**

5th Avenue, Building 100  
Mountain Home AFB, ID 83648

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Comments are encouraged to submit comments through August 20, 2014. Comments should be provided to AFCEC/CZN, Attn: Renae Fischer, Building 171, 2661 Hughes Ave, Ste 155, Lackland AFB, TX 78236-9853 or emailed to [renae.fischer@us.af.mil](mailto:renae.fischer@us.af.mil).

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LSH: July 20, 2014

**Shaw AFB**

**Interagency / Intergovernmental Coordination**  
*Recipients and Example Letter*

The following stakeholders were notified of the preparation of this EA and their input solicited.

<b>State Agencies</b>	
South Carolina Department of Health and Environmental Control Shelly Wilson, Federal Facilities Liaison 2600 Bull Street Columbia, SC 29201	South Carolina Forestry Commission Henry Kodama, State Forester P.O. Box 21707 Columbia, SC 29221
South Carolina Department of Natural Resources Ms. Julie Holling, Data Manager P.O. Box 167, Rembert C. Dennis Building Columbia, SC 29202	South Carolina State Historic Preservation Office Emily K. Dale, Archeologist & GIS Coordinator 8301 Parkland Road Columbia, SC 29223
South Carolina Department of Natural Resources Mr. Paul A. Sandifer, Director 1000 Assembly Street Columbia, SC 29201	
<b>Tribal Agencies</b>	
Catawba Indian Nation Tribal Historic Preservation Office Wenonah Haire – Tribal Historic Preservation Officer 1536 Tom Steven Road Rockhill, SC 29730	Eastern Band of Cherokee Indians - Qualla Boundary Russell Townsend, Tribal Historic Preservation Officer P.O. Box 445 Cherokee, NC 28719
Catawba Indian Nation Tribal Historic Preservation Office Catilin Haire – Tribal Historic Preservation Officer 1536 Tom Steven Road Rockhill, SC 29730	Poarch Band of Creek Indians Tribal Historic Preservation Office Robert Thrower, Acting Tribal Historic Preservation Officer 5811 Jack Springs Rd Altmore, AL 36502
<b>Other Stakeholders</b>	
The Honorable Larry Blanding Sumter City Council, Chairman 13 East Canal Street Sumter, SC 29150	The Honorable Mick Mulvaney United States House of Representatives 1004 Longworth House Office Building Washington D.C. 20515
The Honorable Grady A. Brown South Carolina State House of Representatives P.O. Box 11867 Columbia, SC 29211	The Honorable Joseph H. Neal South Carolina State House of Representatives P.O. Box 11867 Columbia, SC 29211
The Honorable James E. Clyburn United States House of Representatives 2135 Rayburn House Office Building Washington D.C. 20515	The Honorable Robert L. Ridgeway III South Carolina State House of Representatives P.O. Box 11867 Columbia, SC 29211
The Honorable Lindsey Graham United States Senate 290 Russell Senate Office Building Washington D.C. 20510	The Honorable Tim Scott United States Senate 167 Russell Senate Office Building Washington D.C. 20510
The Honorable Nikki Haley Governor of South Carolina 1205 Pendelton Street Columbia, SC 29201	The Honorable G. Murrell Smith, Jr. South Carolina State House of Representatives P.O. Box 11867 Columbia, SC 29211

The Honorable Joseph T. McElveen Mayor of Sumter P.O. Box 1449 Sumter, SC 29250	The Honorable J. David Weeks South Carolina State House of Representatives P.O. Box 11867 Columbia, SC 29211
The Honorable J. Thomas McElveen III South Carolina State Senate P.O. Box 142 Columbia, SC 29202	





**DEPARTMENT OF THE AIR FORCE**  
**AIR FORCE CIVIL ENGINEER CENTER**  
**JOINT BASE SAN ANTONIO LACKLAND TEXAS**

29 April 14

J. Dale Clark, P.E.  
Chief, AF NEPA Center (AFCEC/CZN)  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

The Honorable Joseph T. McElveen  
Mayor of Sumter  
P.O. Box 1449  
Sumter, SC 29250

Dear Mayor McElveen

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be

used for this proposed action if Shaw AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Shaw AFB and the indicated range and airspace areas.

The LAS EA will assess the potential environmental impacts associated with bedding down the LAS training program at one of these three installations to conduct pilot and maintainer training operations. It will also examine the cumulative effects when combined with past, present, and any future proposals. As part of the Air Force's Environmental Impact Analysis Process (EIAP), we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act (NEPA) Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Renae Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Renae Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

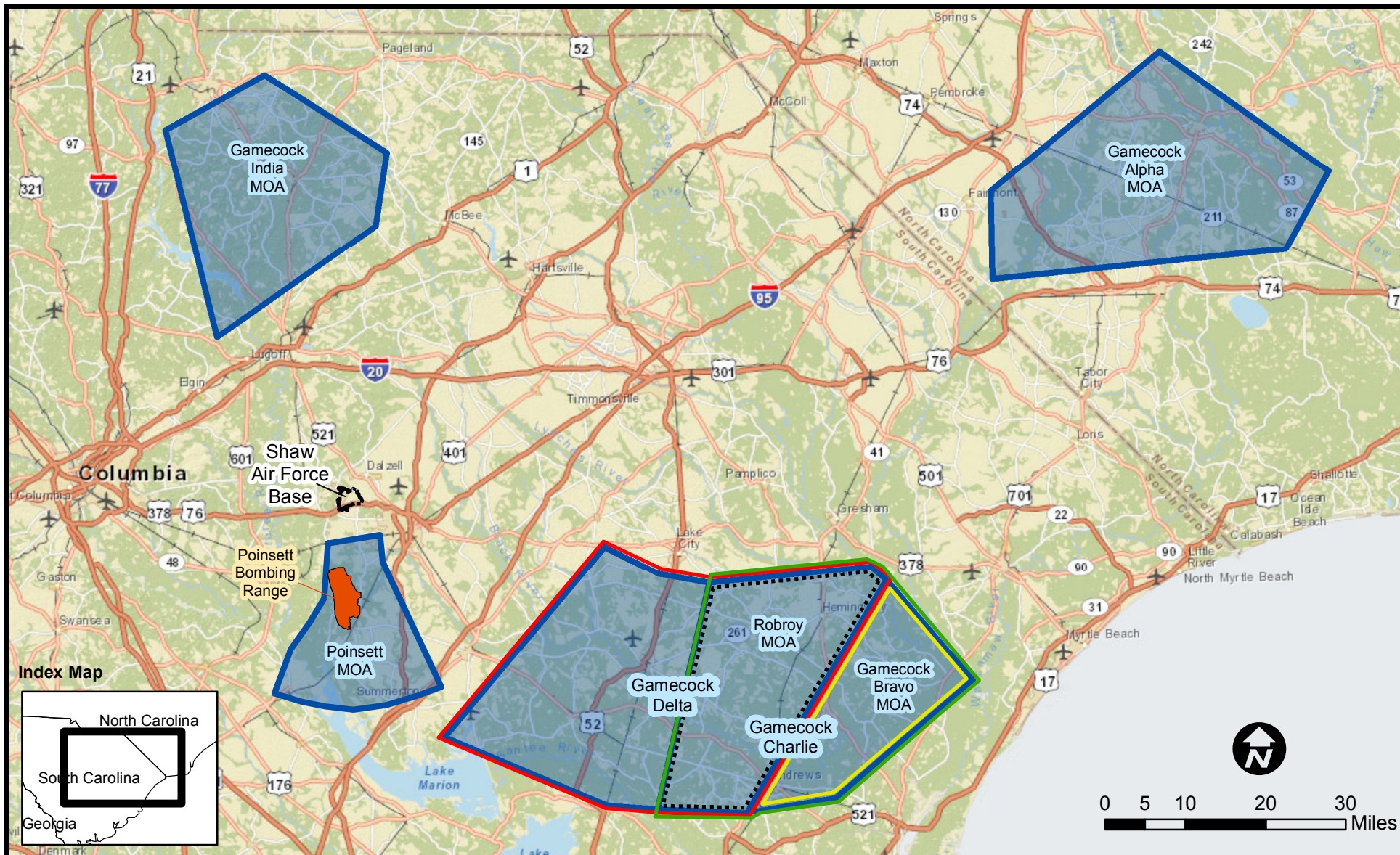
Sincerely,



J. DALE CLARK, P.E.  
Chief, AF NEPA Center  
Environmental Directorate








**Attachment:**

Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Shaw AFB



## Shaw Air Force Base: Proposed Airspace and Ranges

### Legend

-  Shaw Air Force Base
-  Military Operations Area (MOA) Proposed for Beddown
-  Range Proposed for Beddown
-  Gamecock Charlie
-  Gamecock Delta
-  Gamecock Bravo
-  Robroy

**Shaw AFB**

**Interagency / Intergovernmental Coordination**  
*Responses*



# South Carolina Department of Natural Resources



May 13, 2014

Mr. J. Dale Clark, P.E.  
Chief, AF NEPA Center (AFCEC/CZN)  
Bldg. 171, 2261 Hughes Ave., Ste. 155  
JBSA Lackland, TX 78236-9853

Alvin A. Taylor  
**Director**  
Ken Rentiers  
Deputy Director for  
Land, Water and Conservation

RE: Information for Environmental Assessment of Interim A-29 Light Air Support Training Program at Shaw AFB, South Carolina

Dear Mr. Clark,

Because our database does not represent a comprehensive biological inventory of the state, I can only verify the known occurrences in the vicinity of your project. There may be occurrences of species in the vicinity of your project area that have not been reported to us. Fieldwork to insure that no threatened or endangered species are impacted remains the responsibility of the investigator.

Because of the scope of the project, I am only providing general information at the point. Should the Shaw AFB site be considered as the preferred location, I can provide more detailed information as needed. Our primary concern at this point is potential bird and bat impacts, both directly and by noise disturbance. I have attached a list of rare, threatened and endangered birds and bats that are known to occur in South Carolina. If there is nothing in the "USESA Designation" or "State Protection" columns, the species is considered to be of concern in the state, but has no legal protection under the federal or state threatened and endangered species laws. I would also recommend reviewing the relevant county species lists located at <http://www.dnr.sc.gov/species/index.html> to determine if the threatened and endangered species on those lists could be impacted by this training program.

As a professional courtesy, we ask that you acknowledge S.C. Heritage Trust as a source of information whenever you use this data in reports. If you need additional assistance, please contact me by phone at 803-734-9035 or by e-mail at [HollingJ@dnr.sc.gov](mailto:HollingJ@dnr.sc.gov).

Sincerely,

Julie Holling, Data Manager  
SC Department of Natural Resources  
Heritage Trust Program

Encl.



Catherine B. Templeton, Director

*Promoting and protecting the health of the public and the environment*

July 30, 2014

Ms. Renae Fischer  
AFCEC/CZN  
2261 Hughes Avenue, Ste 155  
JBSA Lackland AFB, TX 78236-9853

Re: Draft Environmental Assessment for A-29 Light Air Support (LAS) Training Beddown

Dear Ms. Fischer:

On July 29, 2014, we received notice of the availability of the Draft Environmental Assessment for A-29 LAS Training Beddown. One of the three locations under consideration is Shaw Air Force Base (AFB) in Sumter County, SC, with the preferred location being Moody AFB in Georgia. *Based on the information provided in the draft Environmental Assessment, I am responding on behalf of the South Carolina Department of Health and Environmental Control, Bureau of Air Quality (Bureau).*

The Bureau is tasked with implementing the Federal Clean Air Act (1990, as amended) in the State of South Carolina. The Bureau is required to ensure compliance with the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. Currently two criteria pollutants are of particular concern in South Carolina:

- **Ozone** – The 2008 8-hour ozone standards (primary and secondary) are currently set at 0.075 parts per million (ppm). The area represented in this proposal is meeting the 2008 ozone standards. The Environmental Protection Agency (EPA) is currently reviewing the 2008 ozone standard and the proposal of a new standard is anticipated.
- **Particulate Matter 2.5** (Particulates 2.5 microns in size and smaller) – The 2012 standard for maximum daily concentration is set at 35 micrograms per cubic meter. The 2012 standard for the maximum annual concentration is set at 12 micrograms per cubic meter. The area represented in this proposal is meeting the 2012 particulate matter 2.5 standards.

Presently only the eastern portion of York County has been designated nonattainment for the 2008 8-hour ozone NAAQS. For more information on which areas have been designated nonattainment, please visit <http://www.epa.gov/oar/oaqps/greenbk>. If a project is located in a nonattainment area, it may be subject to prescriptive requirements such as Transportation Conformity, General Conformity or air quality modeling.

All necessary environmental permits for the subject project must be obtained in accordance with applicable state and federal regulations. If you have not already done so, please contact the Bureau of Water at (803) 898-4300 and the Bureau of Land and Waste Management at (803) 898-2000 for input regarding those program areas' assessments of this proposed project.

Thank you for the opportunity to comment on this project. Should you have any further questions or comments concerning this matter, please do not hesitate to contact me at (803) 898-4122 or at [robertln@dhec.sc.gov](mailto:robertln@dhec.sc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "L. Nelson Roberts, Jr." with a stylized flourish at the end.

L. Nelson Roberts, Jr., Manager  
Air Quality Standards and Assessment Section  
SCDHEC Bureau of Air Quality

cc: Regie Watts, Pee Dee EQC Sumter Office [wattsrj@dhec.sc.gov](mailto:wattsrj@dhec.sc.gov)





Catherine B. Templeton, Director

*Promoting and protecting the health of the public and the environment*

## MEMORANDUM

To: Shelly Wilson  
Permitting and Federal Facilities Liaison  
SC Department of Health and Environmental Control

From: Rachel Poole, Environmental Engineering Associate *RDP*  
DoD Corrective Action Section  
Division of Waste Management  
Bureau of Land and Waste Management

Date: July 30, 2014

Re: Draft Environmental Assessment for A-29 Light Air Support (LAS) Training Beddown dated July 2014  
Shaw Air Force Base (SAFB)  
SC7 570 024 466

*Draft Environmental Assessment for A-29 Light Air Support (LAS) Training Beddown* was received via email on July 29, 2014. The Department reviewed the Report with respect to applicable sections of the South Carolina Hazardous Waste Management Regulations (SCHWMR) and the SAFB Hazardous Waste Management Permit (the Permit).

Based on this review, the Department has the following two comments.

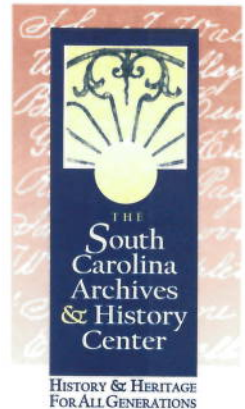
1. According to Section 2.5.2 and Figure 2.5-2, Building 1200 will be used as a classroom, hangar, and flight training device as outline in Course of Action 2. A draft permit modification is being prepared and includes the addition of Building 1200 (SWMU 98) with the requirement to update the existing plume boundaries at the site. The Department has concerns that the nature of this mission will require heightened security in an area already difficult to assess.
2. Section 3.5 outlines what a hazardous material/waste is and how each base will be impacted by this mission. The alternative for Shaw AFB is detailed in Section 3.5.3. According to SCHWMR R.61-79.262.34, any facility that stores a hazardous waste for less than 90 days is exempt as long as it meets the stated qualifications. Shaw AFB no longer has a regulated hazardous waste unit, but uses this exemption to store hazardous waste at a central accumulation point until disposal. Shaw AFB must continue to meet the 90 day disposal deadline and storage conditions in the referenced regulation regardless of the increase in the generation of hazardous waste.

If you have any questions regarding this issue, please contact me at [poolerd@dhec.sc.gov](mailto:poolerd@dhec.sc.gov) or (803) 898-0249.

cc: Stacey French, P.E., Section Manager

June 5, 2014

Ms. Renae Fischer  
Environmental Program Manager  
AFCEC/CZN  
Bldg. 171, 2261 Hughes Ave., Ste. 155  
JBSA Lackland, TX 78236-9853



Re: A-29 Light Air Support (LAS) Training Program, Environmental Assessment  
Shaw Air Force Base, Sumter County, South Carolina  
SHPO Project No. 14ED0056

Dear Ms. Fischer:

Our office has received the scoping letter dated April 29, 2014 submitted as part of your agency's National Environmental Policy Act (NEPA) process for the project referenced above. This letter is for preliminary, informational purposes only and does not constitute consultation or agency coordination with our office as defined in 36 CFR 800: "Protection of Historic Properties" or by any state regulatory process. If the United States Air Force chooses to substitute the NEPA process for the process outlined in Section 106 of the National Historic Preservation Act, your agency must notify our office of the proposed substitution.

Our office understands that Shaw Air Force Base (AFB) is one of three installations under consideration for hosting the LAS training program. The majority of Shaw AFB has been surveyed for archaeological and architectural resources. The results of those surveys, as well as other historical data, can be found at the cultural resource manager's office at Shaw AFB. Our office also maintains several resources for identifying historic properties. ArchSite is an online Geographic Information System (GIS) mapping program that includes all known historic and archaeological sites in South Carolina. Information on ArchSite can be found at <http://archsite.cas.sc.edu/ArchSite/>. A list of properties listed in the National Register of Historic Places can be found at <http://www.nationalregister.sc.gov/nrlinks.htm>. Additional historic contexts, survey reports, and related historic property documents can be found at <http://shpo.sc.gov/research/Pages/conreps.aspx>. These sources should assist your agency in identifying historic properties for NEPA scoping.

The State Historic Preservation Office will provide comments regarding historic and archaeological resources and effects to them once the federal or state agency initiates Section 106 consultation. Project Review Forms and additional guidance regarding our office's role in the compliance process and historic preservation can be found on our website at: <http://shpo.sc.gov/programs/revcomp>.

If you have any questions, please contact me at (803) 896-6129 or at [sylvest@scdah.state.sc.us](mailto:sylvest@scdah.state.sc.us).

Sincerely,

John Sylvest  
Project Review Coordinator  
State Historic Preservation Office

**From:** [Gissentanna, Larry](#)  
**To:** [FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN](#)  
**Cc:** [Mueller, Heinz](#); [Reichgott, Christine](#); [Buskey, Traci P.](#)  
**Subject:** A-29 Light Air Support (LAS) Training Program  
**Date:** Thursday, May 29, 2014 8:22:41 AM

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Ms. Renae Fisher

Environmental Program Manager

Air Force Civil Engineer Center (AFCEC)

Bldg 171,2261 Hughes Ave, Ste 155

JBSA Lackland, TX 78236-9853

Dear Ms. Fisher,

Consistent with Section 102(2)(c) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) appreciates the opportunity to review the Intergovernmental and Interagency Coordination of Environmental Planning (IICEP) /(Scoping letter) dated April 28, 2014, for the proposed A-29 Light Air Support Training Program at Moody Air Force Base, Georgia ;Shaw Air Force Base, South Carolina and Mountain Home AFB, Idaho..

EPA understands that this proposed action is a temporary training program to occur between 2014 and 2019. Existing suitable USAF ranges will be utilized, along with existing airspace. The A-29 Aircraft will be equipped with inert munitions for range training. There will be no additional construction or demolition of buildings required for this proposed action. The draft Concept of Operation (CONOPS) study, conducted by the Air Force, has supported the additional personnel and equipment on these bases with minimal impacts.

EPA Region 4 has no additional comments at this time. Please provide a draft copy of the EA to both EPA Regions 4 and 10 for comment.

Thank you for the opportunity to comment, if you have any questions, you can reach me via the information below.

Larry O. Gissentanna

DoD and Federal Facilities, Project Manager

U.S. Environmental Protection Agency/ Region 4

National Environmental Policy Act (NEPA) Program Office

61 Forsyth Street, SW

Atlanta, GA 30303-8960

Office: 404-562-8248

[gissentanna.larry@epa.gov](mailto:gissentanna.larry@epa.gov)





JOSEPH T. McELVEEN, JR.  
MAYOR



P.O. BOX 1449  
SUMTER, SC 29151  
(803) 436-2500  
FAX (803) 436-2615

June 2, 2014

Ms. Renae Fischer  
Environmental Program Manager, AFCEC, NEPA Center  
Bldg 171, 2261 Hughes Ave, Ste 155  
JBSA Lackland, TX 78236-9853

Dear Ms. Fischer:

The City of Sumter and the entire region would more than welcome the opportunity to support this new mission of training for the Afghan Air Force at Shaw AFB. With a long and strong history of support for our military, the Gamecock City has continuously worked with the leadership of Shaw AFB to forecast needs and provide "ahead of time" requirements such as housing, shopping, schools, jobs for families, etc. We have been a military community and an air power community for over seventy years, and we have always had a partnership with Shaw Air Force Base, which many say is the best in the United States. The City has partnered with Shaw on privatized housing and worked with them where possible for mutually beneficial arrangements. We have also been singled out as a progressive, diverse community and have recently welcomed a major international industrial partner, Continental Tire, to our area which has brought an even greater international flavor to Sumter.

To our knowledge, Shaw AFB along with the availability and suitability of the existing training ranges and airspace would seem to make it a highly desirable location to support this distinctive new mission. We understand and appreciate the mission. The lack of encroachment on the installation and surrounding training location should help ensure uninterrupted access to complete the training syllabus. Recently, we have had intense night flying throughout air space all over our county. There were few, if any complaints, because in Sumter, it's the "sound of freedom". Also, the quality of life for the men and women associated with this mission, both U.S. and Afghans, will continue to be a focus for our community as always. We would envision this as a great opportunity to "adopt" more Airmen, provide for local and regional history and cultural inclusion and perhaps even foster a City Partnership Program with an Afghan city.

Ms. Renae Fischer  
June 2, 2014  
Page 2

The City of Sumter appreciates the opportunity to comment on this proposal to consider Shaw AFB for the new Afghan Air Force Training Mission and look forward to supporting the unit and people associated with it in the near future.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. McElveen, Jr.", is written over the printed name. The signature is fluid and cursive, with a large loop at the end.

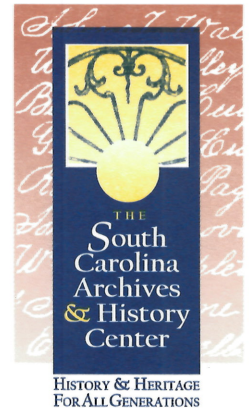
Joseph T. McElveen, Jr.  
Mayor

JTM/ck



July 31, 2014

Ms. Renae Fischer  
Environmental Program Manager  
AFCEC/CZN  
2261 Hughes Ave., Ste. 155  
JBSA Lackland, TX 78236-9853



Re: Draft Environmental Assessment for A-29 Light Air Support (LAS) Training Beddown  
Shaw Air Force Base, Sumter County, South Carolina  
SHPO Project No. 14ED0093 (previous ref. 14ED0056)

Dear Ms. Fischer:

Thank you for your letter dated July 20, 2014, which we received on July 21, regarding the above-referenced project. We also received an electronic version of the draft Environmental Assessment (EA) as supporting documentation for this potential undertaking. The State Historic Preservation Office is providing comments to the Department of the Air Force pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

Our office understands that Shaw Air Force Base (AFB) is one of three installations under consideration for hosting the LAS training program (Alternative C). The draft EA notes that, if Alternative C is selected, LAS training mission elements at Shaw would be housed in Building 611, a building determined eligible for listing in the National Register of Historic Places. Based on the submitted information and on records in our office, our office concurs that the proposed undertaking if implemented will have No Adverse Effect to Building 611.

If you have any questions, please contact me at (803) 896-6129 or at [sylvest@scdah.state.sc.us](mailto:sylvest@scdah.state.sc.us).

Sincerely,

John Sylvest  
Project Review Coordinator  
State Historic Preservation Office  
SC Department of Archives and History

**Shaw AFB**

**Interagency Consultation**  
*Recipient and Letter*

The USAF invited the following Federal agency to enter into consultations regarding the preparation of this EA.

Federal Agencies	
United States Fish and Wildlife Service South Carolina Ecological Services Field Office Attn: Ms. Paula Sisson 176 Croghan Spur Road, Suite 200 Charleston, SC 29407	



DEPARTMENT OF THE AIR FORCE  
20th FIGHTER WING (ACC)  
SHAW AIR FORCE BASE, SOUTH CAROLINA

2 May 14

Colonel Clay W. Hall  
20<sup>th</sup> Fighter Wing Commander  
517 Lance Avenue  
Shaw AFB, SC 29152

United States Fish and Wildlife Service  
South Carolina Ecological Services Field Office  
Attn: Ms. Paula Sisson  
176 Croghan Spur Road, Suite 200  
Charleston, SC 29407

Dear Ms. Sisson

We are requesting concurrence from the U.S. Fish and Wildlife Service (USFWS) that the Afghanistan Air Force (AAF) A-29 Light Air Support (LAS) Training Beddown program *may affect, but is not likely to adversely affect*, the federally-listed species occurring within Sumter County (location of Shaw Air Force Base [AFB]) and the nine other counties under the Poinsett Electronic Combat Range (PECR) and Poinsett Military Operations Area (MOA) and the Gamecock MOAs.

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 LAS training program for the AAF at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the AAF receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and AAF students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 AAF pilots and 90 AAF maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody AFB, Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns,

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rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be used for this proposed action if Shaw AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Shaw AFB and the indicated range and airspace areas.

The USAF accessed the USFWS Information, Planning, and Conservation Online system (<http://ecos.fws.gov/ipac/>) on 28 April 2014 to determine if any federally-listed species potentially occur in the vicinity of the Proposed Action. The following species are federally listed in Sumter County (Table 1) and may potentially occur at Shaw or under the Poinsett Range and MOA as well as the nine other counties under the Gamecock MOAs (Lancaster, Kershaw, Clarendon, Williamsburg, Georgetown and small portions of Berkeley, Florence, Calhoun, and Marion). Also included in the list are the state ranks for the species in each county.

**Table 1. Federally Listed, Proposed, and Candidate Species Known to or That May Occur at Shaw AFB, Poinsett Electronic Combat Range and MOA, or under the Gamecock MOAs**

Common Name	Scientific Name	Federal Listing	State Listing	County
<b>Fish</b>				
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	E	Sumter, Clarendon, Williamsburg, Florence, Marion, Berkeley, Georgetown, Calhoun
<b>Invertebrates</b>				
Carolina heelsplitter <sup>1</sup>	<i>Lasmigona decorata</i>	E	E	Lancaster, Kershaw
<b>Amphibians</b>				
Frosted flatwoods salamander <sup>1</sup>	<i>Ambystoma cingulatum</i>	T	E	Berkeley
<b>Reptiles</b>				
Green sea turtle	<i>Chelonia mydas</i>	T	-	Georgetown
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	-	Georgetown
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	-	Georgetown
<b>Birds</b>				
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E	Sumter, Kershaw, Clarendon, Marion, Williamsburg, Florence, Berkeley, Georgetown, Calhoun
Wood stork	<i>Mycteria americana</i>	E	E	Williamsburg, Marion, Berkeley, Georgetown
Kirtland's warbler	<i>Setophaga kirtlandii</i>	E	-	Georgetown
Piping plover <sup>1</sup>	<i>Charadrius melodus</i>	T	-	Georgetown
Red knot	<i>Calidris canutus rufa</i>	PT	-	Georgetown
<b>Mammals</b>				
West Indian manatee	<i>Trichechus manatus</i>	E	E	Berkeley, Georgetown
<b>Flowering Plants</b>				
American chaffseed	<i>Schwalbea americana</i>	E	E	Sumter, Clarendon, Williamsburg, Florence, Berkeley, Georgetown
Canby's dropwart	<i>Oxypolis canbyi</i>	E	E	Sumter, Clarendon, Williamsburg, Florence, Marion, Berkeley, Georgetown
Little amphianthus	<i>Amphianthus pusillus</i>	T	-	Lancaster
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E	-	Lancaster

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Common Name	Scientific Name	Federal Listing	State Listing	County
Smooth coneflower	<i>Echinacea laevigata</i>	E	-	Lancaster
Georgia aster	<i>Symphytotrichum georgianum</i>	C	-	Kershaw
Michaux's sumac	<i>Rhus michauxii</i>	E	-	Kershaw
Pondberry	<i>Lindera melissifolia</i>	E	-	Marion, Berkeley, Georgetown
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	-	Georgetown
<b>Ferns and Allies</b>				
Black spored quillwort	<i>Isoetes melanospora</i>	E	-	Lancaster

C = Candidate

PT= Proposed Threatened

E = Endangered

T = Threatened

<sup>1</sup> Designated critical habitat in the county

No federally-protected species are known to occur at Shaw AFB. In addition, there would be no ground disturbance or construction occurring as part of the Proposed Action; therefore, no direct or long-term impacts to vegetation are anticipated.

Habitat for federally protected species occurs under the airspace in several counties for the Proposed Action. Due to the nature of the actions proposed within the airspace, no impacts to plant, fish, marine, and invertebrate species are expected to occur because the proposed activities would not result in ground disturbance or potential impacts to water quality. In addition, the Gamecock B MOA does not extend over marine habitat. The Proposed Action would also not affect critical habitat listed for the Carolina heelsplitter as no ground disturbance would occur in these counties.

One federally-listed amphibian species and its critical habitat and five avian species potentially occur under the airspace of the Proposed Action. The frosted flatwoods salamander is endemic to the lower southeastern Coastal Plain, occurring in what were historically longleaf pine-wiregrass flatwoods and savannas. Critical habitat for the species is listed in Berkeley County; however, the Gamecock D MOA only overlies a small portion of the northern end of the county and no ground disturbance from the Proposed Action would occur in this area. Therefore, impacts to frosted flatwoods salamanders and its critical habitat are not expected to occur.

Avian species that occur under the airspace have been exposed to past and ongoing military overflights similar to the Proposed Action. The wood stork is listed in several counties occurring under the Gamecock B-D MOAs. Populations in South Carolina are concentrated along the coastal counties, nesting typically in the upper branches of trees that are in standing water often adjacent to open water for foraging. Three additional listed species are found along the coastal county of Georgetown. The Kirtland's warbler is a migratory species along the South Carolina coast on its way to breeding areas in Michigan. The red knot is a shorebird who over-winter along the South Carolina coast, primarily on sandy beaches and mud flats. Piping plovers also prefer the sandy beaches and shorelines of the coast. Although Gamecock B MOA occurs over Georgetown County where the red knot, Kirtland's warbler, and piping plover are listed, the MOA does not include areas above the coastal region and therefore impacts to these listed species are not expected. Critical habitat for the piping plover occurs along the South Carolina coast and would not be affected by the Proposed Action as it occurs outside of the airspace.

The red-cockaded woodpecker (RCW), a federally-listed endangered species, is the only listed species known to occur on the PECR. The RCW prefers mature pine forests, specifically those with long-leaf pines and loblolly pines. The RCW population at PECR has been monitored since 1994, and extensive records have been kept since 2001. The population has more than tripled since 2001 and consisted of 19 active clusters and 17 potential breeding groups in 2006. Activities in the PECR currently consist of airspace maneuvers similar to the Proposed Action. Shaw AFB aircraft routinely conduct low-altitude flights in the areas of PECR. Baseline noise exposure from aircraft and ordnance use within the airspace has not resulted in reports of significant negative impacts on any wildlife species, including

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listed species. No low-altitude flights are expected in this area as part of the Proposed Action. Further, there would be no ground disturbance or habitat modifications occurring as part of the Proposed Action that might affect RCW or its habitat.

Waterfowl, protected under the Migratory Bird Treaty Act, are the biggest concern on Shaw AFB for potential hazards to flying operations. With additional sorties planned under the Proposed Action the potential for bird-aircraft strikes may increase slightly; however, Shaw AFB has developed and implemented a Bird/Wildlife Air Strike Hazard (BASH) plan to minimize potential issues from migrating waterfowl. In addition, no bald eagle (*Haliaeetus leucocephalus*) nests are known to occur on Shaw AFB or the PECR.

For these reasons, we conclude that the effects related to the implementation of the Proposed Action (the AAF A-29 LAS Training Beddown) *may affect, but are not likely to adversely affect* the federally-listed species occurring within Sumter and the nine other counties occurring under the airspace. Similarly, as no changes from the current conditions would occur if the No Action Alternative were to be selected, we anticipate that implementation of the No Action Alternative *will not affect* federally-listed species.

We request your concurrence with our determination(s). When complete, copies of the draft EA and the draft Finding of No Significant Impact (FONSI) will be forwarded for your review. Please provide written comments, concurrence, or other information regarding the action at your convenience, within 30 days, if possible, from receipt of this letter. Please forward your written response to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC), National Environmental Policy Act (NEPA) Center within 30 days of receipt of this letter. If you have any questions, please contact Ms. Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, Lackland AFB, TX 78236-9853.

Sincerely

  
CLAY W. HALL, Colonel, USAF  
Commander

Attachment:

Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Shaw AFB

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**Shaw AFB**

**Interagency Consultation**  
*Response*





## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200  
Charleston, South Carolina 29407



June 9, 2014

Colonel Clay W. Hall  
20<sup>th</sup> Fighter Wing Commander  
517 Lance Avenue  
Shaw AFB, SC 29152

Re: Afghanistan Air Force A-29 Light Air Support Training Beddown Program  
Shaw Air Force Base-Poinsett Electronic Combat Range, Poinsett and Gamecock  
Military Operations Areas  
FWS Log No. 2014-I-0252

Dear Colonel Hall:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter received on May 12, 2014, requesting concurrence for the determination of *may effect, but are not likely to adversely affect* for the proposed Afghanistan Air Force A-29 Light Air Support Training Beddown Program under the Poinsett Electronic Combat Range, Poinsett and Gamecock Military Operations Areas within nine counties of South Carolina. The following comments are provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA).

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate the potential environmental impacts associated with the bedding down an interim A-29 Light Air Support for the Afghanistan Air Force (AAF) at an installation in the United States (Proposed Action). The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the AAF receives a support and training it needs to safely and effectively enjoy a platform for conduction air interdiction and close air support operations in their home country.

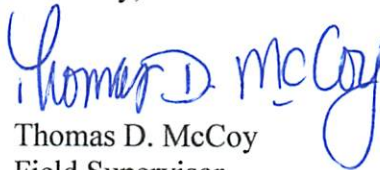
The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia, Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required.

The USAF has provided a thorough analysis of federally-listed species within the Shaw AFB action area to aid in determining the impacts the project may have on protected species. Habitats for federally protected species occur under the airspace in several of the counties listed for the Proposed Action. However, no ground disturbance, habitat modification, or construction would occur as a part of the Proposed Action, therefore, no direct or long-term impacts would occur. For these reasons, the USAF concludes that the effects related to the Proposed Action *may effect, but are not likely to adversely affect* the federally-listed species within Sumter County and the nine other counties occurring under the airspace.

Based on this information, we concur with your determination that the proposed bedding down of an interim A-29 Light Air Support for the Afghanistan Air Force at Shaw AFB is not likely to adversely affect federally protected species. Therefore, the requirements of section 7 of the ESA have been fulfilled relative to the Proposed Action, and no further consultation is necessary at this time. However, obligations under section 7 of the ESA must be reconsidered if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation; or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions or comments or require additional information regarding this letter, please contact Ms. Paula Sisson of my staff at 843-727-4707 ext. 226, and reference FWS Log No. 2014-I-252.

Sincerely,



Thomas D. McCoy  
Field Supervisor

TDM/PTS

cc: Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center  
Bldg. 171, 2261 Hughes Ave., Ste. 155, Lackland AFB, TX 78236-9853

**Shaw AFB**

**Interagency Consultation**  
*Previous Consultations*



Dave,

As of yesterday, we completed our survey of Shaw Air Force Base. In regards to the following buildings, we concur with the consultant's recommendation of not eligible for listing in the National Register of Historic Places:

Buildings:

100, 101, 112, 109, 160, 106, 105, 604, 620, 116, 122, 98, 118, 113, 114, 115, 351, 352, 326, 299, 298, 309, 327, 325, 324, 307, 305, 311, 306, 312, 304, 300, 350, 337, 302, 343, 308, 2, 30, 202, 207, 252, 228, 224, 223, 216, 214, 231, 230, 332, 330, 339, 328, 336, all New Dorms, 409, 416, 408, 407, 406, 414, 402, 417, 429, 428, 430, 396, 402, 2233, 2238, 922, 1304, 2799, 2812, 2798, 935, 931, 932, 933, 934, 1035, 1033, 1032, 1036, 1031, 1043, 1034, 1027, 1028, 1029, 1040, 1041, 1035, 1051, 1005, 1052, 1053, 1054

Building 1048, 924, and 927 are under review by our office for eligibility. If possible, we would like to request copies of the elevations for these buildings.

Thank you,

Caroline Dover Wilson

Review and Compliance Coordinator

South Carolina Dept. of Archives and History

8301 Parklane Road

Columbia, SC 29223

(803) 896-6169

Fax: (803) 896-6167

**\*\*STATUS UPDATE for the week of June 6: We have reviewed and sent letters for projects received through May 15.\*\***

PLEASE NOTE: Project submissions should be MAILED to our office. We recommend using certified mail or UPS/Fed-Ex to ensure your project package has arrived. Due to the high volume of projects we receive, we are unable to confirm delivery. Thank you for your understanding.\*\*

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SHPO E-MAIL COMMENTS FOR VISTS 9 DEC 2010 AND 11 MAY 2011

We evaluated the following buildings on Thursday, December 9th and concur with the consultant's finding that these are not eligible for listing in the National Register of Historic Places.

Building 608 - Built in 2001

Building 721 - Built in 1982

Building 707 - Standing seam metal building

Building 713 - Replaced an earlier building that was built in 1957

Building 710

Building 708 - Fire Department; new building

Building 700 - concrete building that has had a complete exterior rehabilitation

Building 702 - Photo Lab Reconnaissance building - built in 1954 but has had numerous incompatible additions

Building 701 - Stucco building; newer construction

Building 715 - Car Wash Garage; newer construction

Building 1200, 1212 - modernized hangar and storage buildings that were re-sheeted with metal siding

Building 1205 - modern brick building

Building 1206 - Built in 1996

Building 1213 - Built in 1996

Building 1208 - concrete block storage building with adjacent water storage tank; newer construction

Buildings 1207, 1217 - Built in 1996

Building 1210 - Canopy built in 1985

Building 1517 - Corrugated metal building

Building 1510

Building 1501 - concrete block building; newer construction

Building 1518 - Built in 1984

Buildings 1511, 1505 - Built in 1996

Building 1614

Buildings 1986, 1987, 1988, 1989, 1991 - new construction

Buildings 1959, 1960, 1940, 1942, 1944, 1946, 1945, 1943, 1941 - newer construction

Buildings 1992, 1993, 1990 - new construction

Buildings 337, 216, 224, 250, 253, 251, 35, 34, 308, 230, 231, 252, 216, 224 - Newer construction

It was determined by the consultants that Hangar 712 may be eligible for listing in the National Register of Historic Places. This hangar mirrors Building 611, which has been determined eligible for listing in the National Register. However, given that Hangar 611 is the better, most intact example of the two buildings, I would like to 712 to our in-house eligibility committee to make the final determination. Additionally, I would like to Building 615, which is one-story, brick institutional style building with 5 pane vertical windows. The consultants considered it ineligible due to the later addition of a metal canopy on the flight line side of the building. Due to the fact that this canopy is removable I would like the eligibility committee to make a final determination on this building as well. Once we have done this, I will send you an email or letter.

Thanks so much for showing me around the base, and I look forward to further evaluation in the future.

Caroline Dover Wilson

Review and Compliance Coordinator

South Carolina Dept. of Archives and History

As a result of my site visit to Shaw AFB on May 11, 2011, I am able to concur with the recommendations of "not eligible" for the following buildings:

Buildings 19, 21, 22, 23, 26, 29, 31, 35

Buildings 250, 251, 253, 254

Buildings 300, 328, 330, 332, 336, 339, 351, 352

Buildings 918, 922, 930, 931, 932, 933, 934, 935

Buildings 1005, 1046, 1047, 1049, 1051, 1052, 1053, 1054, 1060, 1062

Buildings 1102, 1009, 1118, 1122, 1130, 1133

Building 1304

Buildings 1401, 1402, 1409, 1411, 1413, 1414, 1422

Building 1598

Buildings 1601, 1604, 1605, 1606, 1610, 1619, 1626, 1627, 1628, 1629, 1693, 1695, 1696, 1697

Buildings 1712, 113, 1717, 1720, 1725, 1727, 1799

Buildings 1808, 1809, 1810, 1811, 1812, 1813, 1815, 1816, 1817, 1819, 1821, 1822, 1823, 1824, 1826, 1828, 1829, 1830, 1832, 1833, 1836, 1837, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1847, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1858, 1863, 1865, 1867, 1868, 1869, 1880, 1881, 1882, 1883, 1884, 1885, 1891, 1892

Buildings 1900, 1901, 1902, 1903, 1904, 1907, 1910, 1911, 1916, 1917, 1918, 1919, 1921, 1922, 1923, 1925, 1927, 1930, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1957, 1959, 1960, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993

Buildings 2444, 2449

Buildings 2798, 2799

Building 2812

As discussed, I would like our National Register Eligibility Committee to take a look at Buildings 924 and 927 which are barrack housing built in the 1960s. Additionally, I would like them to look at Building 1048 which is the hospital and was built in 1965. The consultants originally determined these buildings as ineligible for the National Register, however given that our knowledge of modern architecture is still growing, I would like our committee to have a look.

Thanks so much for taking the time to drive me around, and I look forward to returning soon to finish surveying the remaining buildings at Shaw AFB.

Caroline Dover Wilson

Review and Compliance Coordinator

South Carolina Dept. of Archives and History

**Shaw AFB**

**Intergovernmental Consultation**  
*Recipients and Example Letter*



The USAF invited the following Tribal government representatives to enter into consultations regarding the preparation of this EA.

Tribal Governments	
Donald Rogers, Chairman Catawba Indian Nation P.O. Box 11106 Rock Hill, SC 29731	Buford Rolin, Chairman Poarch Band of Creek Indians 5811 Jack Springs Rd. Atmore, AL 36502



**DEPARTMENT OF THE AIR FORCE  
20TH FIGHTER WING (ACC)  
SHAW AIR FORCE BASE SOUTH CAROLINA**

2 May 14

Colonel Clay W. Hall  
20<sup>th</sup> Fighter Wing Commander  
517 Lance Avenue  
Shaw AFB, SC 29152

Buford Rolin, Chairman  
Poarch Band of Creek Indians  
5811 Jack Springs Rd.  
Atmore, AL 36502

Dear Chairman Rolin

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate potential environmental impacts associated with bedding down an interim A-29 Light Air Support (LAS) training program for the Afghan Air Force (AAF) at an installation in the United States. The Department of Defense is exploring the feasibility of a temporary stateside training option to ensure the Afghan Air Force (AAF) receives the support and training it needs to safely and effectively employ a platform for conducting air interdiction and close air support operations within their home country. By receiving training in the United States, American trainers and Afghan students can focus on the A-29 qualification mission without being negatively impacted by ongoing hostilities in the Area of Operations. An A-29 LAS working group has developed a draft Concept of Operations (CONOPS) and basing criteria to support 20 A-29 aircraft, 14 USAF instructor pilots, and 21 maintenance and support personnel to train a total of 30 Afghan pilots and 90 Afghan maintainers. Training is expected to begin in 2014 and conclude in 2019, at which time all aircraft would be transferred to Afghanistan and the program's U.S. component would be disbanded.

As part of the Proposed Action, the A-29 LAS training program would train the AAF in combat and peacetime operations in the A-29 Super Tucano aircraft. Similar to the T-6 aircraft used to train USAF pilots, the A-29 Super Tucano is a single-engine, two-seater aircraft driven by a single turboprop. It is a long-range aircraft designed to operate in extreme climates, such as Afghanistan's mountainous terrain and minimally prepared airfields. The EA will assess the potential environmental impacts associated with bedding down this training program, and will include an examination of the cumulative effects when combined with past, present, and foreseeable future proposals.

The Proposed Action would occur at one of three locations: Moody Air Force Base (AFB), Georgia; Shaw AFB, South Carolina; or Mountain Home AFB, Idaho. These installations have an existing wing


*Global Power For America*

that performs an air-to-ground fighter mission and have sufficient space to house the training activities and associated support personnel; therefore, no further construction or expansion of existing facilities would be required. In addition to classroom and simulator training, AAF pilots would participate in training flights over a suitable USAF bombing and training range. Each installation is within 120 nautical miles of a USAF-administered bombing or training range capable of supporting training with .50 caliber machine guns, rockets, and precision guided munitions. The A-29 LAS training program would utilize existing airspace and ranges and aircraft would only be equipped with inert munitions. The attached figure depicts the range (in orange) and airspace (in dark blue) that would be used for this proposed action if Shaw AFB is selected. The A-29 LAS training program would operate in accordance with all limitations and restrictions currently in place for range and flight activities at Shaw AFB and the indicated range and airspace areas.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the A-29 LAS Training proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to Ms. Renae Fischer, Environmental Program Manager, Air Force Civil Engineer Center (AFCEC) National Environmental Policy Act (NEPA) Center. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Ms. Fischer at (210) 925-3777; Raquel.Fischer@us.af.mil; or AFCEC/CZN, Attn: Ms. Fischer, Bldg 171, 2261 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853. Thank you in advance for your assistance in this effort.

Sincerely

  
CLAY W. HALL, Colonel, USAF  
Commander

Attachment:  
Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Shaw AFB

*Global Power For America*





**Shaw AFB**

**Intergovernmental Consultation**  
*Responses*

From: FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN  
To: ["Caitlin Haire"](#)  
Subject: RE: A-29 LAS  
Date: Tuesday, May 20, 2014 1:55:00 PM

---

Caitlin,

Thank you for your prompt reply. There is no construction or ground disturbing activities associated with this action. Please let us know if you have any other questions.

Thank you,

Renae Fischer, REM, GS-13, DAF  
AF Civil Engineer Center (AFCEC/CZN)  
JBSA-Lackland  
Building 1650  
San Antonio, TX 78226  
DSN: 945-3777  
COMM (210) 925-3777

-----Original Message-----

From: Caitlin Haire [<mailto:caitlinh@ccppcrafts.com>]  
Sent: Tuesday, May 20, 2014 12:51 PM  
To: FISCHER, RAQUEL R GS-13 USAF HAF AFCEC/CZN  
Subject: A-29 LAS

Ms. Fischer,

At this time the Catawba have no comment but we do want to see what ground disturbing activities would occur when you chose the site and then we would like to comment. If you have any other questions let me know. Thanks

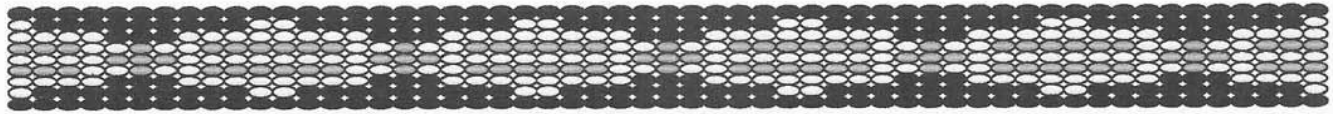
Caitlin

--

Caitlin Totherow  
Catawba Indian Nation  
Tribal Historic Preservation Office  
1536 Tom Steven Road  
Rock Hill, SC 29730

  
\*Please Note: We CANNOT accept Section 106 forms via e-mail, unless requested. Please send us hard copies.  
Thank you for your understanding\*





August 18, 2014

Attention: Renae Fischer  
Department of the Air Force  
2261 Hughes Ave, Suite 155  
JBSA Lackland AFB, TX 78236-9853

Re. THPO #	TCNS #	Project Description
2014-573-2		Draft EA for A-29 Light Air Support (LAS) Training Beddown

Ms. Fischer,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or e-mail [caitlinh@ccppcrafts.com](mailto:caitlinh@ccppcrafts.com).

Sincerely,

Wenonah G. Haire  
Tribal Historic Preservation Officer

**Shaw AFB**

**Public Notification**

## The Sumter Item

### LEGAL NOTICE

#### PUBLIC NOTICE OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN

An Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; or Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the action on the environment at each alternative location, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI). The Draft EA and proposed FONSI, dated July 2014, are available for review at the following locations:

**Sumter County Library**  
111 North Harvin Street  
Sumter, SC 29150

Electronic copies of the documents can also be found on the Air Force Civil Engineer Center (AFCEC) Website at <http://www.afcec.af.mil/>. You are encouraged to submit comments through August 20, 2014. Comments should be provided to AFCEC/CZN, Attn: Ms. Renae Fischer, Building 171, 2661 Hughes Ave, Ste 155, JBSA Lackland, TX 78236-9853 or emailed to [raquel.fischer@us.af.mil](mailto:raquel.fischer@us.af.mil).

#### PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et. seq. All written comments received during the comment period will be made available to the public and considered during the Final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

## The Columbia State

### PUBLIC NOTICE

#### OF AVAILABILITY DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR A-29 LIGHT AIR SUPPORT (LAS) TRAINING BEDDOWN

An Environmental Assessment (EA) has been prepared to analyze the impacts of the A-29 Light Air Support (LAS) Training Beddown at one of three alternative locations: Moody Air Force Base (AFB), Georgia; Mountain Home AFB, Idaho; or Shaw AFB, South Carolina. The purpose of this project is to provide training to Afghan Air Force (AAF) pilots and maintenance personnel on the A-29 Super Tucano LAS aircraft. AAF pilots would be trained utilizing existing airspace, ranges and military training routes, and in accordance with general flight rules.

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## **Appendix B**

### **Air Emissions Calculations**

*Moody AFB*

*Mountain Home AFB*

*Shaw AFB*

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** MOODY AFB

**County(s):** Lanier; Lowndes

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** A-29 LAS

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 9 / 2014

**e. Action Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**f. Point of Contact:**

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

☐ applicable  
☒ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the

GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

**Analysis Summary:**

**2014**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.443	100	
NOx	4.337	100	
CO	6.542	100	
SOx	0.143	100	
PM 10	0.481	100	
PM 2.5	0.352	100	
Pb	0.000	100	
NH3	0.000	100	

**2015**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2016**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2017**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	



<b>PM 10</b>	1.442	100	
<b>PM 2.5</b>	1.055	100	
<b>Pb</b>	0.000	100	
<b>NH3</b>	0.000	100	

### 2018

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

### 2019 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	
NOx	0.000	100	
CO	0.000	100	
SOx	0.000	100	
PM 10	0.000	100	
PM 2.5	0.000	100	
Pb	0.000	100	
NH3	0.000	100	

None of estimated emissions associated with this action are above the GCR thresholds, indicating no significant impact to air quality; therefore, no further air assessment is needed.

\_\_\_\_\_  
Phi Dang, Ctr/ NEPA Air Quality SME

\_\_\_\_\_  
DATE

## 1. General Information

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### - Action Location

**Base:** MOODY AFB  
**County(s):** Lanier; Lowndes  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** A-29 LAS

**- Project Number/s (if applicable):**

**- Projected Action Start Date:** 9 / 2014

### - Action Purpose and Need:

The purpose of the Proposed Action is to provide training to AAF pilots and maintainers of an Afghan A-29 (Super Tucano) LAS training unit, thereby giving AAF the ability to develop an organic, self-sustaining LAS mission capability.

The US Government (USG) has acquired 20 Embraer/Sierra Nevada Corporation A-29 Super Tucano aircraft, which will be transferred to the ownership and operational control of the Government of the Islamic Republic of Afghanistan (GIROA) at the conclusion of the program and attainment of Final Operational Capability (FOC). With aircraft currently in various stages of production, the LAS program now focuses on pilot and maintainer training. LAS training was initially planned to be conducted in Afghanistan. U.S. Forces-Afghanistan recommended moving the training outside of Afghanistan in order to meet the required fielding date of the A-29.

### - Action Description:

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

### - Point of Contact

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

### - Activity List:

Activity Type		Activity Title
2.	Aircraft	A-29 LAS Moody AFB

## 2. Aircraft

---

### 2.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Lanier; Lowndes

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** A-29 LAS Moody AFB

**- Activity Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**- Activity Start Date**

**Start Month:** 9

**Start Year:** 2014

**- Activity End Date**

**Indefinite:** No

**End Month:** 12

**End Year:** 2018

**- Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	5.760545
SO <sub>x</sub>	1.862376
NO <sub>x</sub>	56.385106
CO	85.045726
PM 10	6.246713

Pollutant	Total Emissions (TONs)
PM 2.5	4.572690
Pb	0.000000
NH <sub>3</sub>	0.000000

## 2.2 Aircraft & Engines

### 2.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** T-6A

**Engine Model:** PT6A-68

**Primary Function:** Trainer

**Number of Engines:** 1

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** Yes

**Original Aircraft Name:** A-29

**Original Engine Name:** PT6A-68C

### 2.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	156.00	7.89	1.06	1.77	117.85	3.95	2.16	3252.46
Approach	180.00	1.33	1.06	1.95	94.99	4.18	1.96	3252.46
Intermediate	328.00	3.29	1.06	5.03	33.69	4.15	1.23	3252.46

Military	449.00	0.71	1.06	4.73	10.91	3.34	0.70	3252.46
Take-off	612.00	0.20	1.06	8.18	3.88	4.30	0.61	3252.46

## 2.3 Flight Operations

### 2.3.1 Flight Operations Assumptions

#### - Flight Operations

Number of Aircraft:	1
Number of Annual LTOs (Landing and Take-off) cycles:	3132
Number of Annual TGOs (Touch-and-Go) cycles:	4968

- Default Settings Used: Yes

#### - Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	12.8 (default)
Takeoff (mins):	0.4 (default)
Climb Out (mins):	0.9 (default)
Approach (mins):	3.8 (default)
Taxi/Idle In (mins):	6.4 (default)

#### - Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	9 (default)
AfterBurn (mins):	3 (default)

### 2.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

LTO: Number of Landing and Take-off Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>LTO</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

TGO: Number of Touch-and-Go Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>TGO</sub>: Aircraft Emissions (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 2.4 Auxiliary Power Unit (APU)

### 2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

#### - Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
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## 2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

### - Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
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## 2.4.3 Auxiliary Power Unit (APU) Formula(s)

### - Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$$

APU<sub>POL</sub>: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

NA: Number of Aircraft

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

## 2.5 Aerospace Ground Equipment (AGE)

### 2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

#### - AGE Usage

Number of Annual LTO (Landing and Take-off) cycles for AGE: 3132

#### - Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.75	No	Air Conditioner	MA-3D - 120hp
1	0.5	No	Generator Set	Jettex-40
1	1	No	Hydraulic Test Stand	6X620-RDF
1	1	No	Light Cart	FL-2D
1	0.5	No	Start Cart	Jet Series 703D

### 2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

#### - Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
Jettex-40	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
6X620-RDF	2.5	0.026	0.018	0.757	0.043	0.109	0.105	57.2
FL-2D	0.0	0.025	0.043	0.170	0.130	0.160	0.155	30.7
Jet Series 703D	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

### 2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

#### - Aerospace Ground Equipment (AGE) Emissions per Year

$$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$$

AGE<sub>POL</sub>: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)

AGE: Total Number of Aerospace Ground Equipment

OH: Operation Hours for Each LTO (hour)



LTO: Number of LTOs  
EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)  
2000: Conversion Factor pounds to tons

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** MOUNTAIN HOME AFB

**County(s):** Elmore

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** A-29 LAS

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 9 / 2014

**e. Action Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**f. Point of Contact:**

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
\_\_X\_\_ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the

GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

**Analysis Summary:**

**2014**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.443	100	
NOx	4.337	100	
CO	6.542	100	
SOx	0.143	100	
PM 10	0.481	100	
PM 2.5	0.352	100	
Pb	0.000	100	
NH3	0.000	100	

**2015**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2016**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2017**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	

<b>PM 10</b>	1.442	100	
<b>PM 2.5</b>	1.055	100	
<b>Pb</b>	0.000	100	
<b>NH3</b>	0.000	100	

### 2018

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

### 2019 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	
NOx	0.000	100	
CO	0.000	100	
SOx	0.000	100	
PM 10	0.000	100	
PM 2.5	0.000	100	
Pb	0.000	100	
NH3	0.000	100	

None of estimated emissions associated with this action are above the GCR thresholds, indicating no significant impact to air quality; therefore, no further air assessment is needed.

\_\_\_\_\_  
Phi Dang, Ctr/ NEPA Air Quality SME

\_\_\_\_\_  
DATE

## 1. General Information

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### - Action Location

**Base:** MOUNTAIN HOME AFB  
**County(s):** Elmore  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** A-29 LAS

**- Project Number/s (if applicable):**

**- Projected Action Start Date:** 9 / 2014

### - Action Purpose and Need:

The purpose of the Proposed Action is to provide training to AAF pilots and maintainers of an Afghan A-29 (Super Tucano) LAS training unit, thereby giving AAF the ability to develop an organic, self-sustaining LAS mission capability.

The US Government (USG) has acquired 20 Embraer/Sierra Nevada Corporation A-29 Super Tucano aircraft, which will be transferred to the ownership and operational control of the Government of the Islamic Republic of Afghanistan (GIROA) at the conclusion of the program and attainment of Final Operational Capability (FOC). With aircraft currently in various stages of production, the LAS program now focuses on pilot and maintainer training. LAS training was initially planned to be conducted in Afghanistan. U.S. Forces-Afghanistan recommended moving the training outside of Afghanistan in order to meet the required fielding date of the A-29.

### - Action Description:

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

### - Point of Contact

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

### - Activity List:

Activity Type		Activity Title
2.	Aircraft	A-29 LAS Mountain Home AFB

## 2. Aircraft

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### 2.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Elmore

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** A-29 LAS Mountain Home AFB

**- Activity Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**- Activity Start Date**

**Start Month:** 9

**Start Year:** 2014

**- Activity End Date**

**Indefinite:** No

**End Month:** 12

**End Year:** 2018

**- Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	5.760545
SO <sub>x</sub>	1.862376
NO <sub>x</sub>	56.385106
CO	85.045726
PM 10	6.246713

Pollutant	Total Emissions (TONs)
PM 2.5	4.572690
Pb	0.000000
NH <sub>3</sub>	0.000000

## 2.2 Aircraft & Engines

### 2.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** T-6A

**Engine Model:** PT6A-68

**Primary Function:** Trainer

**Number of Engines:** 1

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** Yes

**Original Aircraft Name:** A-29

**Original Engine Name:** PT6A-68C

### 2.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	156.00	7.89	1.06	1.77	117.85	3.95	2.16	3252.46
Approach	180.00	1.33	1.06	1.95	94.99	4.18	1.96	3252.46
Intermediate	328.00	3.29	1.06	5.03	33.69	4.15	1.23	3252.46



Military	449.00	0.71	1.06	4.73	10.91	3.34	0.70	3252.46
Take-off	612.00	0.20	1.06	8.18	3.88	4.30	0.61	3252.46

## 2.3 Flight Operations

### 2.3.1 Flight Operations Assumptions

#### - Flight Operations

Number of Aircraft:	1
Number of Annual LTOs (Landing and Take-off) cycles:	3132
Number of Annual TGOs (Touch-and-Go) cycles:	4968

- Default Settings Used: Yes

#### - Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	12.8 (default)
Takeoff (mins):	0.4 (default)
Climb Out (mins):	0.9 (default)
Approach (mins):	3.8 (default)
Taxi/Idle In (mins):	6.4 (default)

#### - Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	9 (default)
AfterBurn (mins):	3 (default)

### 2.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

LTO: Number of Landing and Take-off Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>LTO</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

TGO: Number of Touch-and-Go Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>TGO</sub>: Aircraft Emissions (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 2.4 Auxiliary Power Unit (APU)

### 2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

#### - Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
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## 2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

### - Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
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## 2.4.3 Auxiliary Power Unit (APU) Formula(s)

### - Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$$

APU<sub>POL</sub>: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

NA: Number of Aircraft

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

## 2.5 Aerospace Ground Equipment (AGE)

### 2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

#### - AGE Usage

Number of Annual LTO (Landing and Take-off) cycles for AGE: 3132

#### - Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.75	No	Air Conditioner	MA-3D - 120hp
1	0.5	No	Generator Set	Jettex-40
1	1	No	Hydraulic Test Stand	6X620-RDF
1	1	No	Light Cart	FL-2D
1	0.5	No	Start Cart	Jet Series 703D

### 2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

#### - Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
Jettex-40	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
6X620-RDF	2.5	0.026	0.018	0.757	0.043	0.109	0.105	57.2
FL-2D	0.0	0.025	0.043	0.170	0.130	0.160	0.155	30.7
Jet Series 703D	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

### 2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

#### - Aerospace Ground Equipment (AGE) Emissions per Year

$$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$$

AGE<sub>POL</sub>: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)

AGE: Total Number of Aerospace Ground Equipment

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs  
EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)  
2000: Conversion Factor pounds to tons

**1. General Information:** The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

**a. Action Location:**

**Base:** SHAW AFB  
**County(s):** Sumter  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**b. Action Title:** A-29 LAS

**c. Project Number/s (if applicable):**

**d. Projected Action Start Date:** 9 / 2014

**e. Action Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**f. Point of Contact:**

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

**2. Air Impact Analysis:** Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

\_\_\_\_\_ applicable  
\_\_X\_\_ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the

GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR 93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

**Analysis Summary:**

**2014**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.443	100	
NOx	4.337	100	
CO	6.542	100	
SOx	0.143	100	
PM 10	0.481	100	
PM 2.5	0.352	100	
Pb	0.000	100	
NH3	0.000	100	

**2015**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2016**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

**2017**

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	



<b>PM 10</b>	1.442	100	
<b>PM 2.5</b>	1.055	100	
<b>Pb</b>	0.000	100	
<b>NH3</b>	0.000	100	

### 2018

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	1.329	100	
NOx	13.012	100	
CO	19.626	100	
SOx	0.430	100	
PM 10	1.442	100	
PM 2.5	1.055	100	
Pb	0.000	100	
NH3	0.000	100	

### 2019 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	100	
NOx	0.000	100	
CO	0.000	100	
SOx	0.000	100	
PM 10	0.000	100	
PM 2.5	0.000	100	
Pb	0.000	100	
NH3	0.000	100	

None of estimated emissions associated with this action are above the GCR thresholds, indicating no significant impact to air quality; therefore, no further air assessment is needed.

\_\_\_\_\_  
Phi Dang, Ctr/ NEPA Air Quality SME

\_\_\_\_\_  
DATE

## 1. General Information

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### - Action Location

**Base:** SHAW AFB  
**County(s):** Sumter  
**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Action Title:** A-29 LAS

**- Project Number/s (if applicable):**

**- Projected Action Start Date:** 9 / 2014

### - Action Purpose and Need:

The purpose of the Proposed Action is to provide training to AAF pilots and maintainers of an Afghan A-29 (Super Tucano) LAS training unit, thereby giving AAF the ability to develop an organic, self-sustaining LAS mission capability.

The US Government (USG) has acquired 20 Embraer/Sierra Nevada Corporation A-29 Super Tucano aircraft, which will be transferred to the ownership and operational control of the Government of the Islamic Republic of Afghanistan (GIROA) at the conclusion of the program and attainment of Final Operational Capability (FOC). With aircraft currently in various stages of production, the LAS program now focuses on pilot and maintainer training. LAS training was initially planned to be conducted in Afghanistan. U.S. Forces-Afghanistan recommended moving the training outside of Afghanistan in order to meet the required fielding date of the A-29.

### - Action Description:

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

### - Point of Contact

**Name:** Phi Dang  
**Title:** Ctr/ NEPA Air Quality SME  
**Organization:** HQ AFCEC/CZ  
**Email:** phi.dang.ctr@us.af.mil  
**Phone Number:** DSN 945-5209

### - Activity List:

Activity Type		Activity Title
2.	Aircraft	A-29 LAS Shaw AFB

## 2. Aircraft

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### 2.1 General Information & Timeline Assumptions

**- Add or Remove Activity from Baseline?** Add

**- Activity Location**

**County:** Sumter

**Regulatory Area(s):** NOT IN A REGULATORY AREA

**- Activity Title:** A-29 LAS Shaw AFB

**- Activity Description:**

The Proposed Action is to beddown up to 20 A-29 Super Tucano aircraft at a suitable U.S. AFB for the duration of the AAF training program. As part of the Proposed Action, the LAS program would provide baseline mission qualification training to AAF pilots (30) and maintainers (90). Additional permanent supporting personnel will include operations and maintenance support (24), munitions support (10), base operating support (6), and contractors (45 - aircraft maintenance and flying training instructors), for a total of approximately 150 people. The total number of USAF projected dependents is estimated at 178; AAF trainees will not be accompanied by dependents. Total maximum projected permanent party is 350 for this A-29 training beddown. The total training program is anticipated to extend into 2018.

**- Activity Start Date**

**Start Month:** 9

**Start Year:** 2014

**- Activity End Date**

**Indefinite:** No

**End Month:** 12

**End Year:** 2018

**- Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	5.760545
SO <sub>x</sub>	1.862376
NO <sub>x</sub>	56.385106
CO	85.045726
PM 10	6.246713

Pollutant	Total Emissions (TONs)
PM 2.5	4.572690
Pb	0.000000
NH <sub>3</sub>	0.000000

## 2.2 Aircraft & Engines

### 2.2.1 Aircraft & Engines Assumptions

**- Aircraft & Engine**

**Aircraft Designation:** T-6A

**Engine Model:** PT6A-68

**Primary Function:** Trainer

**Number of Engines:** 1

**- Aircraft & Engine Surrogate**

**Is Aircraft & Engine a Surrogate?** Yes

**Original Aircraft Name:** A-29

**Original Engine Name:** PT6A-68C

### 2.2.2 Aircraft & Engines Emission Factor(s)

**- Aircraft & Engine Emissions Factors (lb/1000lb fuel)**

	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
Idle	156.00	7.89	1.06	1.77	117.85	3.95	2.16	3252.46
Approach	180.00	1.33	1.06	1.95	94.99	4.18	1.96	3252.46
Intermediate	328.00	3.29	1.06	5.03	33.69	4.15	1.23	3252.46

Military	449.00	0.71	1.06	4.73	10.91	3.34	0.70	3252.46
Take-off	612.00	0.20	1.06	8.18	3.88	4.30	0.61	3252.46

## 2.3 Flight Operations

### 2.3.1 Flight Operations Assumptions

#### - Flight Operations

Number of Aircraft:	1
Number of Annual LTOs (Landing and Take-off) cycles:	3132
Number of Annual TGOs (Touch-and-Go) cycles:	4968

- Default Settings Used: Yes

#### - Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	12.8 (default)
Takeoff (mins):	0.4 (default)
Climb Out (mins):	0.9 (default)
Approach (mins):	3.8 (default)
Taxi/Idle In (mins):	6.4 (default)

#### - Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	9 (default)
AfterBurn (mins):	3 (default)

### 2.3.2 Flight Operations Formula(s)

#### - Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

LTO: Number of Landing and Take-off Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE\_IN} + AEM_{IDLE\_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>LTO</sub>: Aircraft Emissions (TONs)

AEM<sub>IDLE\_IN</sub>: Aircraft Emissions for Idle-In Mode (TONs)

AEM<sub>IDLE\_OUT</sub>: Aircraft Emissions for Idle-Out Mode (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$$

AEM<sub>POL</sub>: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

TGO: Number of Touch-and-Go Cycles

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE<sub>TGO</sub>: Aircraft Emissions (TONs)

AEM<sub>APPROACH</sub>: Aircraft Emissions for Approach Mode (TONs)

AEM<sub>CLIMBOUT</sub>: Aircraft Emissions for Climb-Out Mode (TONs)

AEM<sub>TAKEOFF</sub>: Aircraft Emissions for Take-Off Mode (TONs)

#### - Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

AEPS<sub>POL</sub>: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONs

#### - Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE<sub>TRIM</sub>: Aircraft Emissions (TONs)

AEPS<sub>IDLE</sub>: Aircraft Emissions for Idle Power Setting (TONs)

AEPS<sub>APPROACH</sub>: Aircraft Emissions for Approach Power Setting (TONs)

AEPS<sub>INTERMEDIATE</sub>: Aircraft Emissions for Intermediate Power Setting (TONs)

AEPS<sub>MILITARY</sub>: Aircraft Emissions for Military Power Setting (TONs)

AEPS<sub>AFTERBURN</sub>: Aircraft Emissions for After Burner Power Setting (TONs)

## 2.4 Auxiliary Power Unit (APU)

### 2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

#### - Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
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## 2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

### - Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
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## 2.4.3 Auxiliary Power Unit (APU) Formula(s)

### - Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$$

APU<sub>POL</sub>: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

NA: Number of Aircraft

EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

## 2.5 Aerospace Ground Equipment (AGE)

### 2.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

#### - AGE Usage

Number of Annual LTO (Landing and Take-off) cycles for AGE: 3132

#### - Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	0.75	No	Air Conditioner	MA-3D - 120hp
1	0.5	No	Generator Set	Jettex-40
1	1	No	Hydraulic Test Stand	6X620-RDF
1	1	No	Light Cart	FL-2D
1	0.5	No	Start Cart	Jet Series 703D

### 2.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

#### - Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO <sub>x</sub>	NO <sub>x</sub>	CO	PM 10	PM 2.5	CO <sub>2</sub> e
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
Jettex-40	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
6X620-RDF	2.5	0.026	0.018	0.757	0.043	0.109	0.105	57.2
FL-2D	0.0	0.025	0.043	0.170	0.130	0.160	0.155	30.7
Jet Series 703D	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

### 2.5.3 Aerospace Ground Equipment (AGE) Formula(s)

#### - Aerospace Ground Equipment (AGE) Emissions per Year

$$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$$

AGE<sub>POL</sub>: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)

AGE: Total Number of Aerospace Ground Equipment

OH: Operation Hours for Each LTO (hour)



LTO: Number of LTOs  
EF<sub>POL</sub>: Emission Factor for Pollutant (lb/hr)  
2000: Conversion Factor pounds to tons